UNIVERSITAS SETIA BUDI

The 1st Setia Budi International Conference on Pharmaceutical and Health

ABSTRACT

GLOBAL HEALTH CHALLENGES IN PHARMACEUTICAL RESEARCH

Sponsored :

DISELENGGARAKAN OLEH :

FAKULTAS FARMASI UNIVERSITAS SETIA BUDI

KEYNOTE SPEAKERS

Asst. Prof. Dr. Laksana Charoenchai

Rangsit University

Asst. Prof. Dr. Laksana Charoenchai Is A Faculty Member At The College Of Pharmacy, Rangsit University In Thailand, Where He Has Been A Lecturer And Researcher Since 2012. He Previously Served As A Lecturer At The Faculty Of Pharmaceutical Sciences, Ubonratchathani University From 2001 To 2011 And Worked As A Hospital Pharmacist At Bamnetnarong Hospital From 1992 To 1995. Dr. Charoenchai Also Participated As A Jsps Research Fellow At The University Of Shizuoka, Japan. He Holds A Ph.D. In Pharmaceutical Sciences (Medicinal Chemistry) From The University Of Maryland At Baltimore, Obtained In May 2001, And A B.S. In Pharmacy From Mahidol University, Thailand, Completed In March 1992. His Expertise Lies In The Quality Control Of Medicinal Plants And Pharmaceutical Products Through Chromatographic And Spectroscopic Techniques, As Well As In Research And Statistical Analysis. Dr. Charoenchai's Research Focuses On Analytical And Medicinal Chemistry, Particularly In Developing Analytical Methods And Formulations For Medicinal Products. He Has Published Numerous Articles In Reputable Journals, Contributing Significantly To The Fields Of Pharmacology And Herbal Medicine.

Nur ‘Ainun Binti Mokhtar

Universiti Teknologi MARA

Dr. Nur 'Ainun Binti Mokhtar is a Senior Lecturer at Universiti Teknologi MARA, Pulau Pinang, Malaysia, and a PhD student at the Malaysia Japan International Institute of Technology (MJIIT). She holds a Master's degree in Bioprocess Engineering from Universiti Putra Malaysia and a Bachelor's degree in Chemical-Bioprocess Engineering from Universiti Teknologi Malaysia. Her research interests encompass computational chemistry, pharmaceutical and medicinal chemistry, and bioprocessing, focusing on phytochemical analysis and the development of natural products. Dr. Mokhtar has been involved in several notable research projects, including studies on the inhibitory activity of traditional herbal compounds and the design of topical products for wound healing. With numerous publications in indexed journals, she is also recognized for her contributions to innovation and technology in pharmacy, having received several awards for her research and inventions. Dr. Mokhtar actively participates in professional organizations and serves as a reviewer and judge for academic competitions, underlining her commitment to advancing education and research in her field.

Prof. Dr. Shabbir Syed-Abdul MD, MSc, PhD

Taipei Medical University

Prof. Shabbir Syed-Abdul is a distinguished academic currently serving as a Professor at the Graduate Institute of Biomedical Informatics at Taipei Medical University in Taiwan. He also holds adjunct positions in the School of Gerontology Health Management and the School of Health Care Administration. With a medical degree from Saint Petersburg Medical Academy, a Master's in Telemedicine and eHealth from the University of Tromso, and a Ph.D. in Health Informatics from National Yang-Ming University, his expertise includes artificial intelligence, wearable devices, and the Internet of Things in healthcare. Prof. Shabbir has published over 120 articles in prestigious journals and has been recognized among the top 2% of scientists globally. His research focuses on the long-term care of older adults and the early prediction and management of chronic diseases. In addition to his teaching and research roles, he is actively involved in various international projects and has served as a consultant in the health IT industry. His commitment to innovation and sustainable healthcare solutions positions him as a leading figure in his field.

Dr. apt. Rina Herowati, M.Si.

Universitas Setia Budi

Dr. Rina Herowati is a respected academic affiliated with the Faculty of Pharmacy at Universitas Setia Budi in Surakarta, Indonesia. She holds a Doctor of Pharmacy degree from the School of Pharmacy ITB (2010), a Master of Science in Telemedicine and eHealth from the University of Tromso, Norway (2005), and a Pharmacist degree from Airlangga University (1999). Her research interests include medicinal chemistry and biochemoinformatics, focusing on developing multi-herbal topical products for arthritis therapy and analyzing traditional Indonesian medicines as immunostimulants. Dr. Herowati has led several significant research projects and has numerous publications in reputable journals, showcasing her expertise in her field. She actively contributes to the academic community through various roles and has participated in numerous organizations related to pharmacy and healthcare.

INVITED SPEAKERS

Dr. Siti Nur Fadzilah Binti Muhsain

Universiti Teknologi MARA, Kampus Bertam, Malaysia

Dr. Siti Nur Fadzilah Binti Muhsain is a Senior Lecturer at Universiti Teknologi MARA, Kampus Bertam, Malaysia. She earned her PhD from the University of Queensland, Australia, and holds a Master of Science in Medical Research from Universiti Sains Malaysia. Dr. Muhsain has extensive expertise in pharmacology and toxicology, focusing her research on various health-related studies, including the impacts of digital infrastructure and the effects of traditional therapies. She has actively participated in several research grants, highlighting her commitment to advancing knowledge in her field. With an impressive h-index of 3 in Scopus and a strong publication record, Dr. Muhsain is recognized for her contributions to medical and health sciences, making her a valuable asset to the academic community.

Rundown

1st Setia Budi International Conference on Pharmaceutical and Health (1st SBICPH)

"Global Health Challenges in Pharmaceutical Research"

Saturday, January 25th 2025 / Solia Zigna, Surakarta, Indonesia

Time	Duration	Activity	PIC
06.15-07.00	45'	Conference committee breafing	Event Committee
07.00-08.00	60'	Registration participants and coffe break	Dr. apt. Lucia Vita Inandha D., M.Sc. apt. Inaratul Rizkhy Hanifah, M.Sc.
08.00-08.30	45'	Opening ceremony: Indonesia Raya (National Anthem) Hymne USB Welcome Remark by: apt. Dian Marlina, S. Farm., M.Si., M.Sc., Ph.D. (Chairman of the committee) Dr. Ir. Djoni Tarigan, MBA (Rector of Setia Budi University) Dr. apt. Iswandi, M. Farm. (Dean of the faculty of pharmacy USB) as well as opening the event	Master of Ceremony: • Steven Parera Putra Mahardika • Yemima Aurellia Amorita MN
08.30-08.40	10'	The signing of the implementation of the collaboration between setia budi university with Rangsit University and Universiti Teknologi MARA Photo Session	Master of Ceremony: • Steven Parera Putra Mahardika • Yemima Aurellia Amorita MN
08.40-08.45	5'	Sponsored videos by PT. Tissan Nugraha Globalindo	Master of Ceremony: • Steven Parera Putra Mahardika • Yemima Aurellia Amorita MN
08.45-09.30	45'	Dr. Laksana Charoenchai from Rangsit University "Analytical quality by design (AQbD) in Pharmaceutical Development"	Moderator: apt. Dian Marlina, S. Farm., M.Si., M.Sc., Ph.D.
09.30-10.15	45’	Nur'Ainun Binti Mokhtar From Universiti Teknologi MARA "Empowering Pharmaceutical Research: Synergistic Role of Natural Products Development, In Silico Tools, and Quality-by-Design Framework"	Moderator: apt. Dian Marlina, S. Farm., M.Si., M.Sc., Ph.D.

Time	Duration	Activity	PIC
10.15-11.00	45'	Prof. Dr. Shabbir Syed Abdul MD, M.Sc. Ph. D From Taipei Medical University "Artificial Intelligence and Digital Solutions for Mitigating Global Health Challenges"	Moderator: apt. Dian Marlina, S. Farm., M.Si., M.Sc., Ph.D.
11.00-12.00	60'	Panel discussion first session Certificate submission by Rector of Setia Budi University (Dr. Ir. Djoni Tarigan, MBA) and Dean of the faculty of pharmacy USB (Dr. apt. Iswandi, M. Farm.)	Moderator: apt. Dian Marlina, S. Farm., M.Si., M.Sc., Ph.D.
12.00-13.00	60'	Break for Lunch	
13.00-13.45	45’	Dr. apt. Rina Herowati, S.Si., M.Si. From Setia Budi University "Exploring the Antiarthritis Activity of Indonesian Herb Medicines"	Moderator: Dr. apt. Tri Wijayanti, M.P.H.
13.45-14.00	15’	Questions and Answer Second Session Certificate submission by Chairman of the committee (apt. Dian Marlina, S. Farm., M.Si., M.Sc., Ph.D.)	Moderator: Dr. apt. Tri Wijayanti, M.P.H.
14.15-16.30	135’	Paralel Session “Oral Presentation”	Event Committee
17.00		Closing	Event Committee

DAFTAR ISI

Analytical Quality by Design in Pharmaceutical Development

Laksana Charoenchai[1]

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Abstract. Analytical quality by design (AQbD) referred to a systematic approach to the development and optimization of analytical methods in pharmaceutical development. It deployed the concept of quality by design (QbD) which was established by regulatory agency (FDA, ICH, EMA) for ensuring product quality through systematic design and quality risk management. AQbD was a tool integrated in process analytical technology (PAT) which was a framework to design, analyze, and control pharmaceutical manufacturingprocess through real-time measurements of critical process parameters (CPPs) and critical quality attributes (CQAs). The workflow of AQbD ensured that analytical methods provided reliable and consistent data for active pharmaceutical ingredient (API) and pharmaceutical product testing. Analytical procedure was established for the intended purpose and used for entire product lifecycle. Chromatographic studies based on AQbD was implemented in various aspects of pharmaceutical development. Some notable examples were analytical methods for bulk and pharmaceutical dosage forms, impurities and degraded products.

Keywords: AQbD, CQA, CPP, PAT, QbD

Empowering Pharmaceutical Research: Synergistic Role of Natural Products Development, In Silico Tools, and Quality-by-Design Framework

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Abstract. The escalating burden of chronic diseases and antimicrobial resistance, coupled with global healthcare inequities, has amplified the demand for natural, safe, and sustainable pharmaceutical solutions. Natural products continue to be a cornerstone of drug discovery, yet challenges in production scalability, development efficiency, and regulatory compliance hinder their widespread adoption. In parallel, consumer preference for natural health products has driven significant market growth, with the herbal medicine sector alone expected to achieve a growing market of USD 429.25b by 2032. Recent technologies in *in silico* tools and systematic frameworks like Quality-by-Design (QbD) provide solutions to these challenges. *In silico* techniques enhance the speed and precision of bioactive compound identification, while QbD ensures robust formulation processes that meet quality standards. Synergistically, these approaches offer a path to sustainable, high-quality, and scalable natural product development. This evolving integration of traditional and modern methodologies addresses global health challenges and positions natural products as key contributors to advancing health innovation, economic growth, and environmental sustainability.

Keywords: Natural Products Development, *In silico* Tools, Quality-by-Design, Pharmaceutical Development, Global Health Challenges

Artificial Intelligence and Digital Solutions for Mitigating Global Health Challenges

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Abstract. Artificial Intelligence (AI) and digital solutions are revolutionizing the healthcare landscape by addressing some of the most pressing global health challenges. From predicting and preventing disease outbreaks to improving diagnostic accuracy, personalized medicine, and operational efficiency, these technologies offer transformative potential. This presentation explores how AI and digital innovations enhance healthcare accessibility, equity, and outcomes, particularly for underserved populations. It also highlights advancements in mental health support, antimicrobial resistance management, and global collaboration. By leveraging AI-driven insights and digital tools, healthcare systems worldwide can become more proactive, equitable, and sustainable, ultimately improving population health.

Keywords: Artificial Intelligence, global health, digital solutions

Exploring Antiarthritic Activity of Indonesian Herbal Medicines

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Abstract. Rheumatoid arthritis is a type of arthritis associated with early mortality, systemic complications, progressive disability, and socioeconomic consequences. Medicinal plants are frequently used as adjuvants in arthritis therapy because their active phytoconstituents possess antioxidant, anti-inflammatory, and immunomodulatory properties with lower toxic effects. This paper explores the anti-arthritis activity of various Indonesian medicinal plants through in vivo, in vitro, and in silico studies. The in vivo tests were conducted on arthritic rats induced by complete Freund's adjuvant, while the in vitro studies involved testing the inhibitory activity of TNF-α and cyclooxygenase. Meanwhile, the in-silico studies were conducted using network pharmacology, molecular docking analysis, molecular dynamics simulations, and the prediction of pharmacokinetics and toxicity parameters. Aloe vera, *Plumbago zeylanica*, *Tinospora cordifolia*, *Zingiber officinale*, *Piper retrofractum*, *Acalypha indica*, and *Physalis angulata* demonstrated anti-arthritis activity, as indicated by a reduction in oedema volume and the joint space narrowing. These plants also exhibited TNF-α and cyclooxygenase inhibitory activity. The results of the in-silico study support and reinforce the findings of the in vitro and in vivo studies.

Keywords: anti-arthritis, anti-inflammatory, herbal medicine, phytoconstituent, pharmacokinetic, toxicity

Bilirubin Beyond Biomarker: A Therapeutic Opportunity in Addressing Global Health Challenges

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Abstract. Recent research reveals that bilirubin, once regarded merely as a toxic byproduct and a clinical marker of liver function, may hold significant therapeutic potential. Studies have explored the mechanisms underlying bilirubin's potent antioxidant and anti-inflammatory properties, focusing on its capacity to mitigate oxidative stress and reduce inflammation. Epidemiological findings, particularly those involving Gilbert's Syndrome, demonstrate the protective roles of moderate bilirubin levels in reducing the risks of cardiovascular and metabolic diseases. Novel interventions—including enzymatic modulators and nanotechnology-based delivery systems that harness bilirubin's protective effects—have been proposed. Its potential benefits for global health are considerable, especially for managing neonatal jaundice in low-resource settings and addressing the rise in chronic disease. Finally, the challenges and ethical considerations of intentionally elevating bilirubin levels will be discussed, emphasizing the need for safe therapeutic windows and rigorous clinical trials. The ultimate goal is to reimagine bilirubin as a cost-effective, innovative tool in public health that could transform prevention and treatment strategies worldwide.

Keywords: bilirubin, oxidative stress, chronic disease, global health challenges

Effect Of Combination Variations of Sodium Starch Glycolate and Ac-Di-Sol as Superdisintegrant on The Solid Dispersion Formulation of Fast Disintegrating Tablet (Fdt) Loratadine

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Abstract. Loratadine is a BCS Class II antihistamine which has low solubility in water. Solid dispersions are used to increase the low solubility of drugs. Superdisintegrant functions to increase the disintegration of FDT in the mouth. Superdisintegrants Sodium Starch Glycolate and Ac-Di-Sol have a good development mechanism of action. The formation of a solid dispersion is carried out using the fusion method, characterized by Differential Scanning Calorymetry. Variations in the combination of Sodium Starch Glycolate and Ac-Di-Sol are 3.75%: 3.75%; 2.5%:5%; 5%:2.5%; 6.5%:1%. The resulting FDT tablets were evaluated using several parameters, namely size uniformity, hardness, friability, wetting time, disintegration, grade, and dissolution. The results showed that solid dispersion increased the solubility of loratadine. A lot of Ac-Di-Sol delay the disintegration and dissolution. High proportion of Sodium Starch Glycolate accelerates disintegration and dissolution. The combination of the proportions of Sodium Starch Glycolate 5% and Ac-Di-Sol 2.5% produces fast disintegration and dissolution.

Keywords: Loratadin, Solid dispersion, FDT, Sodium Starch Glycolate, Ac-Di-Sol.

Testing The Antidepressant Activitty of Black Pepper Leaves (*Piper Nigrum* L.) Ethanol Extract on Male White Mice (*Mus Musculus*)

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Abstract. The black pepper plant (*Piper nigrum* L.) is reported to contain compounds that have antidepressant activity. There has been no research on the activity of black pepper leaves as an antidepressant, so researchers conducted this study. The test was carried out in vivo on male white rats (*Mus musculus*) using the Forced Swimming Test (FST) and Open Field Test (OFT) methods. The dosage variations used were 50, 100, and 200 mg/KgBW and amitriptyline 3.25 mg/KgBW as a positive control. The results were analyzed with SPSS. Ethanol extract of black pepper leaf was proven to have antidepressant activity comparable to amitriptyline at a dose of 100 mg/KgBB FST method by reducing the duration of immobility and and 200 mg/KgBW of the OFT method by increasing the duration of central square. Volatile compounds that affect antidepressant activity are lignan and sesquiterpene group compounds. The results showed that black pepper leaf extract had antidepressant activity.

Keywords: Antidepressant, Extract, Black pepper leaves (*Piper nigrum* L.)

The Antibacterial Activity Test of The Combination of Ethanol Extracts from Moringa Leaves (Moringa Oleifera Lam) And Belimbing Wuluh Leaves (Averrhoa Bilimbi Linn) Against Staphylococcus Aureus ATCC 25923.

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Abstract. Moringa leaves (*Moringa oleifera* L.) and star fruit leaves (*Averrhoa bilimbi* Linn) contain chemical compounds such as flavonoids, saponins, tannins, triterpenoids, and essential oils, all of which have demonstrated antibacterial activity. Previous research has indicated that moringa and star fruit leaves exhibit antibacterial activity against *Staphylococcus aureus* ATCC 25923. This study aimed to determine which extract of moringa leaves, star fruit leaves, or their combination has the most effective antibacterial activity in inhibiting the growth of *Staphylococcus aureus* ATCC 25923. The extraction method used in this study involved a 1:10 ratio with 70% ethanol as the solvent. Antibacterial testing was conducted using the dilution method with concentrations of 50%, 25%, 12.5%, 6.25%, 3.125%, 1.56%, 0.758%, and 0.39%, the diffusion method (disc method), and paper tape to assess the combination pattern. The concentration ratios used for the combination were 1:1, 1:2, and 2:1, with ciprofloxacin as a positive control. The results showed that the combination of ethanol extracts of moringa leaf and star fruit exhibited antibacterial activity against *Staphylococcus aureus* ATCC 25923. Moringa leaf extract and star fruit extract demonstrated antibacterial activity at a concentration of 6.25%, with inhibitory zone diameters of 15.52 mm and 14.21 mm, respectively. The most effective combination ratio of moringa leaf and star fruit ethanol extract was 2:1, resulting in an inhibitory zone diameter of 19.57 mm. The combination effect was found to be synergistic.

Keywords: Antibacterial, combination, moringa leaves, star fruit leaves, *Staphylococcus aureus* ATCC 25923.

Formulation Of Aloe Vera (Aloe Vera L.) Meat Gel Preparation in Combination f Carbopol 940 With Glycerin on Physical Quality and Burn Activity Test in Rabbit Test Animals

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Abstract. Burns are a form of tissue damage or loss that occurs due to contact with a heat source. Aloe vera (Aloe vera L.) contains compounds such as flavonoids, tannins, saponins. The purpose of this study was to determine the effect of the combination of carbopol 940 : glycerin in the preparation of aloe vera meat gel on burn activity in rabbit. Aloe vera meat gel activity test as burns using 3 formulas with a combination of Carbopol 0.5%: 5% glycerin (F I), Carbopol 1%: 4.5% glycerin (F II), Carbopol 1.5%: 4% glycerin (F III), with two control. The physical quality test of the gel includes organoleptic, homogeneity, pH, viscosity, spreadability, adhesiveness, stability. This study used an experimental method, using 8 of New Zealand White rabbit. Data analysis was performed using SPSS application. The results showed that the combination of Carbopol : glycerin had an effect in making aloe vera meat gel preparations. The higher concentration of Carbopol and the smaller concentration of glycerin, the greater viscosity and adhesion, but the small spreadability. Aloe vera meat gel has burn wound healing activity. The best burn wound healing activity is in formula 1 with a combination of 0.5% Carbopol : 5% glycerin.

Keywords: Gel, aloe vera meat, carbopol 940, glycerin, burns

Influence Of the Combination of Na-Cmc with Propylene Glycol in The Making of An Aloe Vera (Aloe Vera L.) Meat Gel on Physical Quality And Activity Test Of Burns In Rabbit

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Abstract. Aloe vera is a plant that can be used as a burn treatment because it contains saponins, flavonoids, and tannins which are useful as anti-inflammatory and antiseptic. This study aims to determine the effect of the combination of Na-CMC with propylene glycol in making aloe vera meat gel preparations on burn activity in rabbits. The activity test of aloe vera mucus extract on burns uses 3 formulas with a combination of Na-CMC 3% : propylene glycol 10% (F I), Na-CMC 4% : propylene glycol 9% (F II), Na-CMC 5% : propylene glycol 8% (F III), and two control. The physical quality test of the gel includes organoleptic, homogeneity, pH, viscosity, spreadability, adhesion, and stability. This study used an experimental method using 8 rabbits. The research data were analyzed by *One Way Anova* method. The results showed that the combination of Na-CMC with propylene glycol had an effect in making aloe vera meat gel preparations. The higher the concentration of Na-CMC and the smaller the concentration of propylene glycol, the greater the viscosity and adhesion, the smaller spreadability. The best aloe vera meat gel burn healing activity is in formula 1 with a combination of 3% Na-CMC : 10% propylene glycol.

Keywords: aloe vera meat, gel, Na-CMC, propylene glycol, burns

Effect Of Variation of Amylum and Lactose as Host and Carrier Of Interactive Mixture Of Glimepiride Tablets Using Direct Felting Method

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Abstract. Glimepiride has poor solubility in water, which affects its bioavailability. The interactive mixture method is one way to accelerate drug solubility by placing the drug in micronised form attached to the *host* (carrier). This study aims to determine the effect of the combination of amylum and lactose as a host in the preparation of interactive mixture of glimepiride tablets on its physical properties and dissolution profile. To find out what combination of amylum and lactose in the preparation of glimepiride tablets gives the best physical quality. Glimepiride tablets were made by direct felting method using variations in amylum and lactose concentrations made granulatum simplex. The preparation of granulatum simplex is a mixture of amylum and lactose (3:7), (2:8), and (1:9), then the physical quality test of tablets is carried out which includes: weight diversity, size uniformity, tablet hardness, tablet fragility, tablet disintegration time and dissolution. The results of the research were then compared with the requirements set by the Indonesian Pharmacopoeia and other literature. The results of the research show that the use of a combination of starch and lactose as fillers in interactive mixtures can have a significant impact on the physical characteristics and dissolution profile of glimepiride tablets. This can reduce brittleness, increase hardness, speed up disintegration time, increase content uniformity, and improve tablet dissolution rate. Formula II with the ratio (18% starch: 72% lactose) and formula III with the ratio (9% starch: 81% lactose) have better physical quality and dissolution profile of glimepiride tablets than formula I.

Keywords: glimepirid, interactive mixture, starch, lactose, direct compression

Inhibitory Power Test of Secang Wood Extract and Fraction (*Caesalpinia Sappan* L.) On The Growth of *Candida Albicans* and Its Bioautography

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Abstract. Sappan wood contains compounds such as brazilin, flavonoids, saponins, tannins, and terpenoids that have the potential to inhibit fungal growth. This study was conducted to determine the inhibitory power of extracts and fractions of secang wood and the most active group with KLT bioautography. The inhibition test of secang wood extracts and fractions on *C. albicans* growth used the paper disc diffusion method. The concentrations used were 6; 9; and 12%, positive control fluconazole and negative control DMSO 3%. The diffusion method was followed by KLT bioautography method on the most active compounds. The diffusion test data obtained were analyzed using *Twoway* ANOVA analysis testing. The results showed that the extract, n-hexane fraction, ethyl acetate fraction, and water fraction had inhibition against C. albicans. The diameter of the largest inhibition zone is the water fraction at a concentration of 12% with an average inhibition zone of 16.19 mm. The water fraction is the most active fraction followed by the bioautography method which shows the presence of tannin compounds with Rf 0.61

Keywords: *Caesalpinia sappan* L., *Candida albicans*, fraction, bioautografi.

Antibacterial Activity of Guava Fruit Peels Extract and Fraction (*Psidium guajava* L.) and Bioautography Analysis on The Growth of *Staphylococcus aureus*

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Abstract. Increasing *Staphylococcus aureus* infection increase antibiotic resistance. Guava peels (*Psidium guajava* L.) contains flavonoids, alkaloids, saponins, and tannins that have the potential to overcome various infections. Guava peels was extracted by the maceration method using 70% ethanol, then fractionated using n-hexane, ethyl acetate, and water solvents was made with concentrations of 8, 10, and 12%, the positive control is ciprofloxacin, and the negative control was DMSO 3%. Antibacterial testing was carried out using the diffusion method. The results of the largest diameter were continued to bioautography tests. The results showed that a concentration of 12% in the water fraction had the largest diameter of 16.55 mm which was included in the strong category. The water fraction that showed the most active antibacterial activity was then subjected to the bioautography method. The results obtained showed the presence of flavonoid compounds at Rf 0.34 with a diameter of 1.1 mm.

Keywords: *Psidium guajava L. peels, Staphylococcus aureus, antibacterial, bioautography*

Wound Healing Activity of Anting-Anting Leaf Extract Gel Preparation (*Acalypha Indica* L.) On The Back of Male White Rats (*Rattus Norvegicus*)

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Abstract. The wound is caused by the activity of combined with sharp object. Flavonoids, saponins and tannins *Acalypha indica* L. help the wound healing process. The purpose this study determine the wound healing activity of earring leaf extract gel preparation (*Acalypha indica* L.) on the back of male white rats (*Rattus novergicus*). 25 male rats were divided 5 groups. Group I negative control (gel base without extract), group II positive control (Binasol®), group III (1% carbopol base earring leaf extract gel), group IV (1.5% carbopol base earring leaf extract gel), and group V (2% carbopol base earring leaf extract gel). Wound length, erythema, and scab were measured. Data analyzed with SPSS. The results earrings leaf extract gel with base concentrations 1; 1.5; and 2% good physical quality and stability. The wound healing activity of earring leaf extract gel preparation can heal cut wounds in white rats with effective concentration 1% base.

Keywords: Anting-anting leaves, cuts, gels.

Prediction Of Pharmacokinetic Profile and Toxicity of Kaffir Lime (*Citrus* Hystrix) Plant Using Admetlab 3.0 (Abstract)

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Abstract. Kaffir lime plant is a plant that is often used by the community as a traditional medicinal herb. The number of developments in the use of traditional medicine among the community encourages research related to the prediction of pharmacokinetic and toxicity profiles that have not yet been carried out. Compound data collection using KNApSAcK. Smile code collection with PubChem. Drug similarity selection was performed on SwissADME. ADME and toxicity data collection using ADMETlab 3.0. The results showed that only 36% of compounds passed druglikeness testing. ADME analysis shows different characteristics based on the compound group, this is influenced by the physicochemical properties and specific functional groups of the compound group content. Toxicity analysis of kaffir lime compounds shows toxic potential and in the TOX21 pathway some terpenoid group compounds tend to be inactive compared to other compound groups. Predictions of the best drug candidates are citronelyll formate compounds.

Keywords: Kaffir lime, Pharmacokinetic profile, Toxicity, Druglikeness

Formulation and Activity Test of Broiler Chicken Claw Collagen Emulgel Preparation on Burn Healing in New Zealand Rabbits

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Abstract. Burns are tissue injuries caused by contact with hot materials. Collagen from broiler chicken feet has burn healing activities formulated into emulgel preparations. Emulgel uses HPMC as a gelling agent. This study was to determine the effect of HMPC concentration on physical quality and preparation activity on burn healing. Collagen extraction through the maceration process using acetic acid. The HPMC concentrations used were 2%, 2.5%, and 3%. Emulgel preparations are tested for physical quality and stability. Healing of burns is carried out on 5 rabbits. Emulgel was applied 2 times a day and observed wound reduction for 21 days, then statistically analyzed. The results showed that the variation in the concentration of HPMC prepared with chicken claw collagen emulgel affected physical quality, stability, and burn healing activity. Formula 1 HPMC concentration of 2% showed the best results based on physical quality, stability, and burn healing activity.

Keywords: Collagen, broiler chicken feet, HPMC, emulgel, burn.

Effect Of Variation Concentrations of Cetyl Alcohol and Steareth-20 On Male Rabbit Hair Growth in Creambath Preparations of Ethanol Extract of Water Spinach Leaves (*Ipomoea Aquatica*)

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Abstract. Hair loss often occurs in many people which if not immediately addressed can cause baldness. Water spinach leaves have been shown to have the best hair growth activity at a concentration of 5%. This research was developed into a creambath preparation with variations of cetyl alcohol and steareth-20 to increase the efficiency of its use. Water spinach leaves were processed into a thick extract and added to creambath preparations with concentrations of cetyl alcohol 4%, 4.5%, 5% and steareth-20 1.4%, 0.9%. The preparation was tested for physical quality, stability, and activity on rabbits for 15 days. The results showed that variations in the concentration of cetyl alcohol and steareth-20 affected the physical quality, stability, and activity in growing hair. The formula that has the best physical quality, stability, and hair growth activity is formula 1 with a concentration of 4% cetyl alcohol and 1.4% steareth-20 based on statistical tests.

Keywords: Water spinach (*Ipomoea aquatica*), cetyl alcohol, *steareth*-20, creambath, hair growth, New Zealand White rabbits.

Effect Of Amylum and Lactose Mixture Host Size on Physical Quality and Dissolution of Glimepiride Interactive Mixture Tablets

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Abstract. Glimepiride is practically insoluble in water and is highly hydrophobic can affect its bioavailability and rate of dissolution. The interactive mixing method is used to improve the solubility of the drug and increase the dissolution of glimepiride tablets with large carrier (host) components so that the micronizing active substance adheres to the host. The purpose of this study is to determine the influence and best formulation of the amillum-lactose mixture host size on the physical quality and dissolution of glimepyride tablets. Glimepiride tablets are made using the direct flannel method with variations in mesh sizes of 18/40, 20/40, and 30/40. Physical quality testing of tablets is in the form of hardness, brittleness, crushing time, content uniformity, and solution test. The data results were processed using the SPSS program from the ANOVA one-way analysis technique with a confidence level of 95%. The results showed that the variation in the host size of the mixture of amylum and lactose had a significant effect on the physical quality test and dissolution of glimepyride tablets. In formula 3 with various host sizes 30/40 provides the best physical quality and solution compared to formula 1 and 2.

Keywords: Glimepiride, interactive mixture, host, amylum, lactose, directly felt.

Effect Of Variations In Cettyl Alcohol Concentration On Preparation Of Moringa Leaf Ethanol Extract *Creambath* (Moringa Oleifera L.) Against Rabbit Hair Growth

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Abstract. A frequent hair problem is hair loss. Moringa leaf extract has the fastest activity in hair growth at 6% concentration. This study developed moringa leaf extract into a cream dosage formulation by varying the concentration of cetyl alcohol. Moringa leaf extract was obtained by maceration method using 96% ethanol solvent. The 6% moringa ethanol extract was made into creambath preparations in 3 formulas with varying concentrations of cetyl alcohol, namely 3%, 4%, and 5%. The creambath preparation was tested for physical quality, stability and activity of rabbit hair growth for 15 days with the parameters of average hair length and hair weight. The results showed that the variation of cetyl alcohol concentration in moringa leaf ethanol extract creambath preparation affects viscosity, spreadability, pH, stability and hair growth activity. Formula I with 3% cetyl alcohol concentration showed the best results based on one-way ANOVA.

Keywords: Moringa leaves (Moringa oleifera L.), cetyl alcohol, creambath, hair growth, New Zealand White rabbits.

The Impact of Treatment Adherence on Quality of Life in Patients with Systemic Lupus Erythematosus: A Cross-Sectional Study

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Abstract. Systemic Lupus Erythematosus (SLE) is a chronic autoimmune disease that poses a significant burden. This study was aimed to evaluate medication adherence and its impact on the quality of life of SLE patients. A cross-sectional study had been conducted involving 116 patients. Adherence was measured using the MMAS-8, and quality of life was assessed through the LupusQoL questionnaire. Data were analyzed using Pearson correlation (p-value<0.05 considered significant). The findings showed that most patients were female (99.1%) and had been receiving treatment for over a year (87.1%). Commonly prescribed medications included methylprednisolone and mycophenolate mofetil. Medication adherence among SLE patients was classified as low (average MMAS-8 score of 3.8 out of 8). Overall QoL score was 53.0%. A significant correlation was found between medication adherence and quality of life (Spearman correlation=0.779; p<0.05). This study highlights the essential role of pharmacists in promoting medication adherence to improve the QoL for SLE patients.

Keywords: Systemic Lupus Erythematosus (SLE), Medication adherence, Quality of Life (QoL), Morisky Medication Adherence Scale-8 (MMAS-8), Lupus Quality of Life (LupusQoL).

Evaluation Of Physical Quality and Antiaging Efficacy Of 73% *Saccharomyces Rice Ferment Filtrate* (Srff) Serum On Rabbit Skin

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Abstract. UV-A rays increase ROS in the skin, leading to aging. Saccharomyces rice ferment filtrate (SRFF) 5% acts as an anti-aging agent. This study examines SRFF's potential, the effect of xanthan gum variations (0.25, 0.5, and 0.75%) on serum quality, stability, and anti-aging activity. SRFF was obtained by fermenting 5 g of rice in 100 mL aquadest with Saccharomyces cerevisiae for 24 hours at room temperature. Serum evaluation included organoleptic tests, pH, viscosity, homogeneity, stability, and irritation tests, using ANOVA and paired t-tests for data analysis. Results showed all formulas met physical quality standards, with viscosity increasing and pH decreasing as xanthan gum concentration increased. No irritation was observed in rabbit tests. The 0.5% xanthan gum formula demonstrated the best anti-aging activity, improving collagen (37.00±4.69%), elasticity (30.40±3.97%), and moisture (28.40±3.36%), making it the most stable and effective formulation.

Keyword : Antiaging, Efficacy, SRFF serum, xanthan gum

The Influence of Maseration Time (Immeration) On the Vocity Of Birthleaf Extract (Piper Betle)

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Abstract. Betel is a medicinal plant that has the main chemical content which gives the betel leaf the characteristic characteristic of being essential oil. The advantage of this method is easy and does not need heating so that natural materials are less likely to be damaged or decomposed. The purpose of this study was to determine the effect of maceration time (immersion) on the viscosity of betel leaf extract (Piper betle). The design of this research is quantitative descriptive, which describes the comparison of maceration extracts at different times. The results then calculate the yield. The sample used in this study is betel plant grown in the Green House Pharmacy at Ibrahimy University. Based on the results of the extraction of betel leaf maceration, the highest yield value was seen in the treatment with a soaking time of 72 hours, namely 8.15%. The average yield value of maceration extraction was 7.83%.

Keywords: Betel leaf, Maceration Extraction, Soaking Time

Stability Orders Of Cocystal Paracetamol And Sitric Acid Are Influenced In Various Temperatures

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Abstract. cocrystal in the pharmaceutical has been developed because this is the one to solve the problem in the pharmaceutical, by varyed the amount of a single crystal form so that it changes the physicochemical properties of its single crystal component. Changes that occur include *melting points*, changes in hydration stability, resistance to thermal stability, changes in hygroscopic properties, solubility, and bioavailability. The crystal form is preferred because it tends to be stable, reproducible, and easily purified compared to other solid forms such as amorphous. The dissolution rate and solubility of each crystal are different so that it affects the bioavailability and arrangement of the crystal group.Paracetamol crystals is the BCS class 2 category which is difficult to dissolve in water and it will be made into a cocrystal using coformers of citric acid with different variations in temperature and time to test the crystal stability. This can be proved by detection used the FTIR to see changes in the groups in the crystal and the dissolution test and detected by UV-Vis spectro to see the stability of the crystal or cocrystal formed. By varyedtemperatures at meltingpoint or up to meltingpoint is suspected that paracetamol is not stable.The results of the dissolution test seen in the levels of paracetamol and paracetamol samples which decreased in level were in line with the increase in temperature and time variations. Data analysis using SPSS is known that there is a signification that indicates that there are differences in levels due to temperature and time variations indicating that paracetamol paracetamol and cocrystal samples are unstable.

Keywords: Cocrystal, Paracetamol, stability, meltingpoint, and temperature

Formulation And Physical Quality Testing Of Strawberry Leaf Extract Gel Preparation *(Fragaria X Ananasa)* With Carbopol 940 Concentration Variations As A Gelling Agent

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Abstract. The formulation of gel preparations in this study aims to determine whether sunscreen gel preparations of ethanol extract of strawberry leaves with various concentrations of carbopol 940 can be formulated into gels with good physical quality.Strawberry leaves were extracted using maceration method with 96% ethanol solvent. Analysis of the extract content was carried out by Thin Layer Chromatography (TLC). Concentration of 1% strawberry leaf extract and variations of carbopol 940 0.5%; 1%; 1.5%. Determination of physical quality tests, namely organoleptic test, pH test, viscosity test, spreadability test, adhesion test and stability test. Then, it was analyzed using the Statistical Product and Service (SPSS) program.The test results for strawberry leaf extract gel showed stability and physical quality, where the high concentration of carbopol caused an increase in viscosity and adhesion but reduced spreadability. Gel preparation in formula 2 with 1% carbopol concentration had the best physical quality and stability.

Keywords: Formulation, physical quality test, strawberry leaves, Carbopol 940.

Isolation And Characterization of Alpha Celullose from Young Coconut (*Cocos Nucifera* L.) Coir Using Alkaline Treatment with Variations of Naoh Concentration

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Abstract. Young coconut coir contains more cellulose than other biomass. The purpose of this research is to utilize young coconut coir and determine the best NaOH concentration in the delignification process to produce good alpha cellulose from young coconut coir. The delignification method was carried out by alkaline hydrolysis with varying concentrations of NaOH 5%, 10%, and 15%, bleaching with AHP, and followed by purification of alpha cellulose using 17.5% NaOH. The characteristics of alpha cellulose obtained have met the requirements. The physicochemical properties of alpha cellulose were also determined from the results of analysis using FTIR and SEM instruments which showed a similarity between alpha cellulose from young coconut coir and commercial alpha cellulose. The results of this study concluded that the alpha cellulose isolation method with alkaline hydrolysis succeeded in making young coconut coir as alpha cellulose with the best NaOH concentration variation of 10% in the delignification process.

Keywords: young coconut coir, *Cocos nucifera* L, lignocellulose, alpha cellulose, alkaline treatment, AHP

Review of The Efficacy of Nanoparticle-Based Extracts Of Natural Product For Cancer Treatment

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Abstract. The development of cancer therapy is increasingly leaning towards more targeted and effective approaches, one of which is through the use of nanoparticles in anticancer therapy delivery. The research method utilized is a literature review, searching for relevant scientific articles using electronic databases such as Elsevier, Google Scholar, and PubMed. Studies focus on nanoparticles derived from natural extracts such as rubber cassava leaves (*Manihot glazovii*), soursop leaves (*Annona muricata*), fig leaves (*Ficus carica L.*), temulawak (*Curcuma xanthorrhiza*), and *Vernonia amygdalina* leaves. Moreover, soursop leaf extract encapsulated in alginate nanoparticles has shown significant anticancer activity against HepG2 liver cancer cells. This research demonstrates that nanoparticle technology innovation provides significant opportunities in developing safer and more effective cancer therapies, with the capability to precisely target cancer cells.

Keywords: Nanoparticles, Natural Extracts, Cancer Therapy

Studi Literature Review: Potential of Catechin Compounds in Green Tea (*Camelia Sinensis*) As Anti-Obesity

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Abstract. Obesity is a growing health concern associated with chronic diseases like diabetes, hypertension, and cardiovascular disorders. Green Tea (*Camellia sinensis*), rich in catechins, has demonstrated potential anti-obesity effects through mechanisms such as thermogenesis, fat oxidation, and inhibition of fat absorption. This study reviews seven research articles exploring the role of catechins, particularly epigallocatechin gallate (EGCG) in combating obesity. Experimental and clinical findings reveal that green tea consumption significantly reduces body weight, triglycerides, and fat accumulation by regulating lipid metabolism and enhancing energy expenditure. Variations in the efficacy of green tea were noted based on dietary composition, with stronger effects observed in unsaturated-fat diets. Additionally, processed green tea extracts exhibited enhanced thermogenic activity. These findings support the potential application of green tea catechins as a natural intervention for obesity management.

Keywords: Green tea, catechins, epigallocatechin gallate, anti-obesity, lipid metabolism

Isolation Of A-Cellulose from Young Coconut Coir (*Cocos Nucifera* L.) Using Microwave Irradiation Heating Method: A Sustainable Innovation

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Abstract. Cellulose is a key component with significant potential in various industrial applications. Young coconut coir (*Cocos nucifera L.*) contains a high cellulose content of approximately 43.44%, making it an attractive source for cellulose isolation. This study aims to isolate α-cellulose from young coconut coir using microwave irradiation heating methods, which include liquefaction, delignification, and bleaching stages. This method offers time efficiency and improved quality of results. The findings indicate that the optimal treatment for obtaining α-cellulose was achieved with a 5% H_2O_2 concentration at 500 W for 10 minutes, repeated three times, resulting in a yield of 22.37%. The characteristics of the isolated α-cellulose demonstrate good physicochemical properties, with SEM, FT-IR, and AAS analyses confirming its quality. These results affirm that the microwave irradiation method effectively enhances the efficiency of the isolation process and the quality of the product, establishing young coconut coir as a sustainable source for cellulose production.

Keywords: α-Cellulose, Young Coconut Coir, *Cocos nucifera* L, Microwave Irradiation Heating Method

Potential of Bangle (*Zingiber cassumunar*) Essential Oil as In Silico Anti-aging

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Abstract. Premature aging of the skin is a common problem that often occurs due to exposure to UV rays and degradation of the activity of collagenase, elastase, hyaluronidase, and tyrosinase enzymes. This study aims to evaluate the potential of bangle (*Zingiber cassumunar*) essential oil (BEO) as an anti-aging agent using an in silico approach. The research method involved molecular docking between the chemical constituent of BEO and the collagenase, elastase, hyaluronidase and tyrosinase enzymes. Target proteins were obtained from the Protein Data Bank (PDB) with codes 5UWK, 5A8Y, 5DIY, and 5M8P. The results showed that compounds namely cinnamyl acetate and scopoletin have better binding affinity to tyrosinase enzyme than the original ligand. ADMET predictions of these two compounds showed a good pharmacokinetic profile. It can be concluded that two compounds found in BEO indicated potential as anti-aging agent through inhibition of tyrosinase enzyme.

Keywords: *Zingiber cassumunar*, in silico, molecular docking, binding affinity, ADMET

Pharmacist's Perspective on The Usability Level Of Beyond Use Date Calculator Application

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Abstract. After opening the primary packaging, pharmacists must provide patients with information on the drug's shelf life. Information technology can help pharmacists provide information on drug shelf life. This research aims to analyze the usability level of the drug shelf life calculator application and the need for its development from a pharmacist's perspective. The level of application usability was measured using the System Usability Scale questionnaire involving 83 pharmacists in the city of Salatiga. Analysis of application development needs was identified using qualitative methods, such as interviewing respondents. The pharmacist's perspective shows that the usability level of the beyond-use date calculator application is at Level A- (Spectacular) with a score of 80,69. Pharmacists identify development needs including the need for an offline application when there is no internet connection and the addition of calculating the beyond-use date for the reconstitution of sterile preparations. This research shows that, the drug shelf life calculator application has a spectacular level of usability and needs to be developed to make it more useful.

Keywords: drug shelf life, non-sterile, application improvement

The Use of System Usability Scale Questionnaire in Assessing the Level of Satisfaction on Health Websites In Chronic Kidney Disease Patients

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Abstract. The purpose of this study is to assess the validity, reliability, and correlation of using the system usability scale (SUS) questionnaire to measure chronic kidney disease patients satisfaction with the use of health websites. Validity tests were performed on both content and construct. Statement items that have been confirmed valid are checked for reliability by determining the Cronbach's alpha value. A correlation test was performed to compare the results of the satisfaction assessment determined through the questionnaire formula to the results gathered from the patient's personally assessment. The content validity ratio is ≥ 0.78 (valid), while the content validity index is >0.89 (appropriate). The questionnaire is valid (construct validity > 0.275) and reliable (Cronbach alpha 0.705). There is a strong correlation between the results of questionnaire-based satisfaction predictions and direct patient satisfaction assessments (coefficient interval 0.794). The SUS questionnaire can be used to assess patient satisfaction with health-related websites.

Keywords: health-related websites, chronic kidney disease, patient satisfaction, system usability scale, questionnaire

Formulation and Activity Test of Emulgel Preparation Containing Patah Tulang Stem Extract (*Euphorbia tirucalli* L.) as a Wound Healer for Incisions on the Back of New Zealand Rabbits.

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Abstract. The stem of the Patah Tulang plant is beneficial as an alternative treatment for cuts because it contains compounds such as sapogenin, ellagic acid, and glycosides, which help accelerate the wound healing process. Emulgel is an appropriate topical preparation for treating cuts. This study aims to determine whether the extract of the *Patah Tulang* stem can be formulated into an emulgel with good physical properties and to evaluate the activity and concentration of the gelling agent HPMC in wound healing. The extract of the Patah Tulang stem was obtained using the maceration method with 96% ethanol as the solvent. The extract was then formulated into an emulgel with a concentration of 10% and varying concentrations of the gelling agent HPMC (1%, 3%, and 5%). The resulting emulgel formulations were tested for their physical properties, including organoleptic tests, homogeneity, emulgel type, pH, adhesiveness, spreadability, viscosity, and stability. The wound healing activity was tested on New Zealand rabbits. Data on wound healing, physical properties, and the stability of the emulgel were analyzed statistically using SPSS.The results of the study showed that the extract of the *Patah Tulang* stem can be formulated into an emulgel with good physical properties and stability. The emulgel made from the extract of the *Patah Tulang* stem demonstrated wound healing activity, with the most effective concentration of the gelling agent HPMC being 1%.

Keywords: *Euphorbia tirucalli* stem, extract, emulgel, anti-incised wound

Effectiveness Test of Ethanol Extract Fraction of Lamtoro Leaves (*Leucaena leucocephala* L.) As Antidiabetes in Male White Mice (*Mus musculus*)

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Abstract. Diabetes mellitus as one of the degenerative diseases is a long-term condition characterized by increased blood sugar levels and metabolic disorders. Lamtoro leaves are one of the plants that are often used as traditional medicine. The purpose of this study was to determine the effectiveness of the ethanol extract fraction of lamtoro leaves and the effective dose of the ethanol extract fraction of lamtoro leaves as an antidiabetic, as well as the histopathological picture of the pancreas in male mice induced by alloxan. This study used 30 male mice divided into 6 groups, each group consisting of 5 male mice. Positive control glibenclamide, negative control Na CMC 0.5%, ethanol extract of lamtoro leaves 150 mg/kg BW, n-hexane fraction of lamtoro leaves 60 mg/kg BW, ethyl acetate fraction of lamtoro leaves 30 mg/kg BW, and water fraction of lamtoro leaves 75 mg/kg BW. All groups were treated for 13 days. Day 0, day 3, day 7, and day 13 determine blood sugar levels, on day 14 mice were dissected and pancreas organs were taken which were used as histopathology preparations. Blood sugar levels in mice were measured using a glucometer via intravenous. The data obtained were then analyzed using the SPPS application with the One Way Anova method followed by the Post Hoc test. The results showed that the fraction of lamtoro leaf ethanol extract can reduce blood sugar levels in mice. Fractions of lamtoro leaf ethanol extract can effectively reduce blood sugar levels at doses of 75 mg/kg BW of water fraction, 30 mg/kg BW of ethyl acetate fraction, and 60 mg/kg BW of n-hexane fraction. Dosing the fraction of lamtoro leaf ethanol extract on the histopathology picture of the pancreas can reduce necrotic cell damage to mice.

Keywords: Alloxan, antidiabetic, lamtoro leaves, ethanol extract fraction, pancreatic histopathology.

Testing The Analgesic Activity of Leunca (*Solanum nigrum* L.) Leaf Extract on Male Mice (*Muscular muscles*)

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Abstract. Pain is an unpleasant sensory feeling that can be managed with analgesics. Fever is an increase in body temperature above the average normal temperature that can be overcome with antipyretics. The purpose of this study was to determine the activity and determine the effective dose of antipyretic analgesic ethanol extract of leunca leaves against male mice induced with 1% acetic acid and 10% peptone. This research carried out analgesic and antipyretic tests using 50 white Swiss Webster males. This test was divided into 5 treatment groups, namely negative control (CMC Na 0.5% dose 0.5 ml/20 grams BW of mice), positive control (paracetamol), and leunca leaf extract treatment group (245 mg/ kgBW of mice, 490 mg/kg BW of mice and 980 mg/kg BW of mice). Mice were induced with 10% peptone at a dose of 0.01 ml/g of mouse body weight subcutaneously and 1% acetic acid at a dose of 0.2 ml/g of mouse body weight intraperitoneally. Body temperature is measured using a digital thermometer rectally, temperature is measured every 15 minutes for 90 minutes after oral administration. Pain is seen when there is squirming every 15 minutes for 90 minutes after oral administration. The data obtained was then explained using the SPSS application with the *One Way* ANOVA method then continued with the *Post Hoc* LSD test. The results of the research show that leunca leaf extract has activity as an analgesic with an effective dose of leunca leaf extract, namely 490 mg/kg body weight of mice. shows that leunca leaf extract has antipyretic activity with an effective dose of leunca leaf extract, namely 245 mg/kg BW of mice

Keywords: Leunca leaf (*Solanum nigrum*), Leunca leaf ethanol extract, Analgesic, antipyretic.

Formulation And Testing Of Spf (*Sun Protection Factor*) Preparation Of Ethanol Extract Cream Of Kirinyuh Leaves (*Chromolaena Odorata* L.) Using Uv-Vis Spectrophotometry Method

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Abstract. Sun Protection Factor (SPF) is a universal indicator that describes the effectiveness of a sunscreen product. The SPF value shows the effectiveness of a product in reducing erytherma due to exposure to UV rays. The flavonoid content of kirinyuh leaves (*Chromolaena odorata* L) has potential as a sunscreen. This research aims to evaluate the physical properties of ethanol extract cream from kirinyuh leaves (*Chromolaena odorata* L) and determine the Sun Protection Factor (SPF) value using UV-Vis spectrophotometry. Kirinyuh leaves were extracted using the maceration method then continued with making a cream formulation with varying concentrations of ethanol extract from kirinyuh leaves, namely 5%, 7.5% and 10%. The resulting product was evaluated using several parameters, namely organoleptic test, homogeneity test, cream type test, pH test, viscosity test, adhesion test, spreadability test, stability test and Sun Protection Factor (SPF) test using UV-Vis spectrophotometry from wavelengths. 290-320 nm. The results of the physical quality test of the cream preparation meet the requirements for a good cream preparation except for adhesion because it is less than 4 seconds. The SPF values of the cream preparations were obtained at concentrations of 5% (15.19), 7.5% (16.59) and 10% (30.22). A cream preparation with a concentration of 10% is the best preparation for sunscreen effectiveness.

Keywords: SPF, Kirinyuh Leaves (*Choroomolaena odorata* L). Cream, UV-Vis Spectrophotometry

Network Phamacology of Indian Franchise (*Boswellia serrata*) and Turmeric Rhizome (*Curcuma longa* L.) as Antiinflammatory in Osteoarthritis

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Abstract. Osteoarthritis is a type of arthritis caused by cartilage damage. Indian frankincense and turmeric rhizome have potential as anti-inflammatory for OA. This study identifies target proteins in the pathophysiology of OA, determines Indian frankincense and turmeric rhizome compounds that target these proteins, and analyzes the network pharmacology profile. This study used network pharmacology to analyze the chemical, with data obtained from KNApSAcK. Target proteins in OA were validated through UniProt, protein interactions were analyzed using String. Screening of active substances using PubChem, prediction of target proteins of bioactive compounds using STP, SEA, and SuperPred. Visualization of protein and compound interactions using Cytoscape. Protein NP visualization showed target proteins associated with Indian frankincense and turmeric rhizome compounds, including NFKBIA, NOS2, MAPK1, MAPK3, MAPK14, PTEN, MMP1, MMP3, MMP13, and AKT1. Active compounds such as various boswellic acids, curcumin, and quercetin form network pharmacology profiles relevant to OA target proteins.

Keywords: anti-inflammatory, osteoarthritis, indian frankincense, turmeric rhizome, network pharmacology, cytoscape

Valuation of Medication Management on Drug Availability at The Pharmacy Installation of The Health Office of Sragen Regency In 2023

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Abstrack. The effective management of pharmaceuticals is crucial for ensuring the availability of essential medications, which directly impacts the quality of healthcare services. This study examines the pharmaceutical management processes within the Health Department of Sragen Regency in 2023, focusing on the availability of medications. Employing a descriptive observational method, data were collected through quantitative analysis of existing documentation at the pharmacy installation. The findings reveal that while the distribution of medications aligns with the Ministry of Health's standards, other areas such as planning accuracy and the procurement of generic medicines fell significantly short. Specifically, the study highlights a mere 27% availability of medications, with an alarming average stock-out period of 47 days. These results underscore the need for improved pharmaceutical management practices to enhance medication availability and, ultimately, patient care.

Keywords: Drug Management, Sragen District Health Service Pharmacy Installation, Drug Availability, Drug Management Indicators.

Antibacterial Activity Test Antibacterial Cream Preparation from Extract U*lva Lactuca* Against the Growth *Methicillin-Resistant Staphylococcus Aureus* (Mrsa)

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Abstract. Bacteria that have high resistance to various antibiotics include *Staphylococcus aureus*. Where several strains of *Staphylococcus aureus* become resistant to *Methicillin-Resistant Staphylococcus aureus* (MRSA). *Ulva lactuca* is a marine natural product that produces compounds with antibacterial activity.This study aims to determine the antibacterial activity of *Ulva lactuca* extract in cream formulations against the growth of MRSA bacteria. The extraction of *Ulva lactuca* was carried out by maceration with 96% ethanol as the solvent. Phytochemical screening tests were conducted on the extract of *Ulva lactuca*. The extract of *Ulva lactuca* was formulated into creams with concentrations of 50% and 70%. The antibacterial activity was tested using the well diffusion method and *Mannitol Salt Agar (*MSA) media. The antibacterial activity of the sample was determined by measuring the clear zone formed around the well. The results of the antibacterial activity test showed clear zones produced at concentrations of 50% and 20%, measuring 0.879 cm and 1.041 cm, respectively. The results of the antibacterial activity test against MRSA bacteria showed a high antibacterial potency at a concentration of 70%.

Keywords: Extract, *Methicillin-Resistant Staphylococcus aureus,* Bacterial resistance*, Ulva lactuca.*

Emulgel Formulation of Black Tumeric Rhizome Extract (*Curcuma Caesia* Roxb) With A Variety of Hpmc and Activities Healing Burns White Rabbits (*New Zealand*)

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Abstract: Burns are tissue damage caused by contact with a heat source. Black turmeric (*Curcuma caesia* Roxb) contains flavonoids, tannins, and alkaloids that function as anti-inflammatory. This study aims to determine the formulation of black turmeric rhizome extract emulgel with varying concentrations of HPMC (2%, 4%, 6%) which has physical quality, good stability, and effectiveness in healing burns. The burn healing test was conducted on the backs of *New Zealand* rabbits for 21 days, and the evaluation of the physical quality of black turmeric rhizome extract emulgel included organoleptics, viscosity, pH, spreadability, adhesiveness, and homogeneity. The results showed that HPMC variation affected the physical characteristics and good stability and black turmeric rhizome extract emulgel formula with HPMC variations that have effectiveness in healing burns is 4% HPMC.

Keywords: Black turmeric (*Curcuma caesia* Roxb), emulgel, HMPC, burns.

Comparison of Spf (Sun Protection Factor) Value of *Saccharomyces cerevisiae* Rice Ferment Filtrate of White Rice and Rice Wash Water With 5% Concentration in-Vitro

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Abstract. Chemical compounds used as UV protectants are often detrimental to the skin; therefore, natural ingredients like Saccharomyces cerevisiae fermented filtrate from white rice and rice washing water are far more effective alternatives. This study decisively compared the SPF (Sun Protection Factor) values and total phenolic content of fermented white rice and rice washing water infused with Saccharomyces cerevisiae yeast over a 24 hour period. The results unequivocally demonstrated that fermentation significantly enhanced both phenolic content and SPF values. Notably, the rice washing water filtrate increased phenolic content from 6.35 mg GAE/g to an impressive 15.59 mg GAE/g, achieving a peak SPF value of 45.292±1.721 at a 2% concentration. Thus, it is clear that rice washing water stands out as a superior ingredient for effective UV protection.

Keywords: Value SPF, white rice, fermentation, *Saccharomyces cerevisiae*

Hepatoprotective Activity of Ethanol Extract of Papaya Flower (Carica papaya L.) in Paracetamol-Induced White Rats

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Abstract. Papaya flower (*Carica papaya* L.) contains flavonoids, steroids/terpenoids, tannins, and saponins with potential hepatoprotective properties. This study aimed to evaluate the hepatoprotective activity of the ethanol extract of papaya flowers. A total of 30 rats were divided into six groups: normal control, negative control, positive control, and groups receiving 75 mg/kg BW, 150 mg/kg BW, and 300 mg/kg BW of papaya flower extract for 13 days, followed by the administration of a toxic dose of paracetamol on day 14. Serum ALT and AST levels were measured on days 0 and 15, followed by liver histopathological analysis. Data were analyzed using a One-Way ANOVA test. The results showed that the 300 mg/kg BW dose of ethanol extract of papaya flowers was the most effective in reducing ALT and AST levels, while the 150 mg/kg BW dose provided the most significant hepatoprotective effect based on liver histopathological evaluation.

Keywords: papaya flower, hepatoprotector, ALT, AST, histopathology.

Determination of Iodine Content in Table Salt Products Circulating in the Surakarta Market by Iodometry

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Abstract. The government's efforts that have a positive impact on improving Human Resources (HR) are to free the Indonesian people from Iodine Deficiency Disorders (IDD) by improving the nutritional status of the community. On a national scale, salt is one of the food additives used by humans as a flavor enhancer. Potassium iodate (KIO3) is one of the substances that must be present in iodized salt. This study aims to determine and ascertain the iodine content in table salt circulating in the Surakarta market. The research method includes sample preparation, making a 2N H_2SO_4 solution, making a 10% potassium iodide (KI) solution, making a 1% starch solution, making a 0.1 N KIO_3 solution, making a 0.005 N $Na_2S_2O_3$ solution, standardizing the Na_2S_2O3 solution, and determining the potassium iodate (KIO_3) content using the iodometric titration method. The results of the study on 7 salt samples taken randomly found that 4 samples, namely salt B 44.79 ppm, salt C 42.91 ppm, salt E 38.85 ppm, and salt G 41.42 ppm, had KIO_3 content meeting the SNI standard of 30-80 ppm. The other 3 samples, namely salt A 16.23 ppm, salt D 27.51 ppm, and salt F 19.80 ppm, did not meet the SNI standard for KIO_3 content.

Keywords: iodine content, salt, iodometry.

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Comparison of SPF Value of White Rice Water Wash Fermentation Filtrate and *Saccharomyces cerevisiae* Rice Ferment Filtrate Consentration 10% In Vitro

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Abstract. This study explored the potential of fermented rice washing water and fermented rice filtrate with *Saccharomyces cerevisiae* as a source of sun protection factor (SPF). Using IR 64 Setra Ramos rice from Pasar Gede, the samples were processed with 10% fermentation for 72 hours. Total phenolic content was measured using Folin-Ciocalteau reagent, and SPF value using the AUC method. The results showed that fermented rice washing water had a total phenolic content of 14.529 mg GAE/g extract and an SPF value of 28.441±0.496 (ultra protection category), while the values of Saccharomyces cerevisiae filtrate and unfermented samples were much lower.

Kata Kunci: Sun Protection Factor (SPF), fermentation, *Saccharomyces cerevisiae*

Study Of Drug Interactions In Inpatient Patients With Type 2 Diabetes Mellitus At Dr. Soehadi Prijonegoro Sragen Hospital, 2023 (Abstract)

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Abstract. Drug interactions can occur when a combination of 2 or more drugs is used for pharmacological therapy which causes undesirable effects. Interactions can be minor, moderate and major interactions. According to the mechanism, there can be pharmacokinetic and pharmacodynamic interactions. The aim of this research is to determine the description of the use of antidiabetic drugs, find out which drugs cause the most interactions and identify drug interactions used in Type 2 DM patients inpatients at RSUD dr. Soehadi Prijonegoro Sragen in 2023. This research is a type of descriptive research that is non-experimental in nature using retrospective data. The samples used were Type 2 DM patients inpatients at RSUD dr. Soehadi Prijonegoro Sragen in 2023 as many as 100 people. Next, the medical record data that was obtained was analyzed descriptively and identified the severity and mechanism of drug interactions using the Drugs.com and Stockley's Drugs Interactions websites. The results of the analysis showed that there were 89 patients who had the potential to experience drug interactions. The highest level of severity of drug interactions is moderate severity (81.1%) with pharmacodynamic mechanisms (23.6%). Drugs that have the potential to cause interactions are lansoprazole and sucralfate (9.54%).

Keywords: Drug interactions, Diabetes Mellitus, *Drugs.com, Stockley's Drugs Interactions*

Formulation Of Antioxidant Serum Preparation Of Avocado Leaf Ethanol Extract (*Persea Americana* M.)

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Abstract. Avocado leaves are efficacious as antioxidants that work as electron donors and react with free radicals into stable compounds. This study aims to determine the physical quality, stability of avocado leaf extract serum preparations with carbopol variations, and to determine whether avocado leaf extract serum preparations have antioxidant activity. This study used 5 formulations, namely negative control, positive control, avocado leaf ethanol extract concentration of 10% with carbopol concentration variations of 0.5%, 1%, and 1.5%. The method used was the DPPH method using UV-Vis spectrophotometry. Evaluation of the physical properties of the preparation consisted of organoleptic, homogeneity, viscosity, pH, spreadability, and stability tests. The results showed that serum preparations with variations in concentration can affect the value of physical quality and stability, and avocado leaf extract serum preparations have antioxidant activity classified as strong antioxidants with IC_{50} values of 87.868 ppm to 89.256 ppm.

Keywords: avocado leaf ethanol extract, antioxidant, serum, DPPH.

Comparison of Acrylamide Levels in Fried Cassava with and without Blanching Processing Methods Using High-Performance Liquid Chromatography (Abstract)

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Abstract. Acrylamide, a carcinogenic compound formed in carbohydrate- and protein-rich foods at high temperatures, is a concern in fried cassava. This study aims to determine and reduce acrylamide levels in cassava using two processing methods: frying with prior blanching (hot water immersion to dissolve acrylamide precursors) and frying without blanching, analyzed by High-Performance Liquid Chromatography (HPLC). Cassava samples were prepared using dichloromethane-ethanol solvent extraction and analyzed on a C18 column with a mobile phase of 85% phosphoric acid in acetonitrile-water (5:95) at a 0.5 mL/min flow rate. Method verification showed linearity (R^2 = 0.999), LOD (0.3933 mg/L), LOQ (1.1918 mg/L), accuracy (97.29%), and precision (1.35%). Acrylamide levels were 0.0315 g/kg BW/day for unblanched cassava and 0.0171 g/kg BW/day for blanched cassava. SPSS analysis (Shapiro-Wilk and Mann-Whitney tests) indicated no significant differences between the two methods ($p > 0.05$).

Keywords: Acrylamide, Friedcassava, High-Performance Liquid Chromatography (HPLC)

Network Pharmacology of Pulai Leaves (*Alstonia scholaris* L.) As Antiasthma

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Abstract. Asthma is a heterogeneous disease of the lower airway. This study aims to identify protein involved in the pathophysiology of asthma, as well as evaluate the potential of pulai leaves as anti-asthma through pharmacological network analysis of target proteins. This research uses the NP method to collect data on pulai leaf chemical compounds from KNApSAcK. Asthma target proteins were identified through the KEGG pathway and validated with UniProt. Protein interactions used String, active substance screening was done through PubChem, Swiss Target Prediction, SEA, and SuperPred, and interaction visualization was done with Cytoscape. Visualization of NP profiles showed asthma target proteins involved with pulai leaf compounds, namely NFKB1, GSK3B, SYK, BLNK, BTK, GRB2, LAT, LCK, MAP2K1, RAF1, PIK3CA, and FYN. Compounds such as aquammicine, betulinic acid, oleanolic acid, ursolic acid, beta-sitosterol, isorhamnetin, chlorogenic acid, quercetin, citral, tetrahydroalstonine, alpha-amyrin, and kaempferol in pulai leave form a NP profile with asthma target protein.

Keywords: asthma, pulai leaves, network pharmacology, Cytoscape

Isolation and Characterization of Alpha Cellulose From Young Coconut Coir (*Cocos Nucifera* L.) By Variation Of Acid Hydrolysis

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Abstract. Cellulose in young coconut fiber has a high cellulose content of 43.44% which can be utilized as raw material for the pharmaceutical industry and the textile industry which is still needed because there is still dependence on the manufacture of imported medicinal and textile raw materials from abroad. The isolation process of young coconut fiber uses acid hydrolysis because it is able to degrade lignin well. The acid used is nitric acid which is able to produce high cellulose by breaking the relationship between the lignocellulose matrix and cellulose. Alpha cellulose as a predictor or level of cellulose purity, isolation of alpha cellulose using nitric acid hydrolysis with variations in concentration of HNO_3 2.5%, 3.0%, 3.5% Characterization carried out on alpha cellulose, namely organoleptic, pH, starch test, solubility test, FTIR test, Morphology and yield. The effect of concentration can affect the results of alpha cellulose obtained.

Keywords: Isolation alpha cellulose, *cocos nucifera* L, alpha cellulose, characterization alpha cellulose, acid hydrolysis

Antihiperglicemic Activity Test On Aloksan Induced Mencits And Antioxidan Test By Abts Method Using Etanol Extract Of Kemangi Leaves (*Ocimum X Afranicum* Lour.)

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Abstract. Basil leaves (*Ocimum x afranicum* Lour) contain flavonoid compounds, saponins, tannins, and essential oils that can function as antioxidants. The purpose of this research is to test the antioxidant activity and test the antihyperglycemic activity of the ethanol extract of basil leaves (*Ocimum x afranicum* Lour). Antioxidant activity testing was carried out quantitatively with the ABTS method using a UV-Vis spectrovotometer at a wavelength of 743nm, while antihyperglycemic activity testing was carried out experimentally using the POCT (Point of Care Testing) method in mice induced by alloxan 150 mg/kg BW. 30 mice were divided into 6 groups: negative control (CMC Na 0.5%), positive control (glibenclamide 0.65 mg/kg BW), and test groups with basil extract at doses of 0.28 g/kg BW; 0.56 g/kg BW; and 1.12 g/kg BW. The data obtained were analyzed statistically with one way ANOVA. The results showed that basil leaf extract has antioxidant activity with an IC50 value of 27.21 ppm, this indicates that basil leaf extract gives very strong results in antioxidant activity. Giving basil leaf ethanol extract can reduce blood glucose levels of mice with an effective dose at a dose of 0.56 g/kg BW.

Keywords: antioxidant, basil leaf (Ocimum x afranicum Lour), ABTS, IC50, antihyperglycemic.

Uji Aktivitas Antioksidan Mikroenkapsul Fikosianin Dari *Spirulina Platensis* Dengan Penyalut Maltodekstrin Dan Isolat Protein Kedelai Dengan Metode ABTS

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Abstract. Phycoscyanin microcapsules are made by *freezedrying* method with a ratio of maltodextrin and GPA of 10:0, 7.5:2.5, 5:5. The test was carried out to characterize and test the antioxidant activity of the ABTS method by preparing a stock solution of 1000 ppm extract samples with dilution series of 50 µL, 100 µL, 150 µL, 200 µL and 250 µL. The test results were statistically analyzed using SPSS. The results of the study after statistical analysis showed that the use of variations in the concentration of maltodextrin coating and GPA had an effect on phycosyanin levels, yield, efficiency, encapsulation, particle size distribution and phycoscyanin microcapsules. However, it did not affect the purity index and the best formulation, namely F2 with a phycoscyanin content of 1.351 mg/ml, moisture content of 7.66%, yield of 1.436%, encapsulation efficiency of 10.88% and particle distribution of 76.1, particle size of 2.904. Testing of antioxidant activity by ABTS method from each concentration obtained inhibition percentages of 37.414%, 46.295%, 55.844%, 63.256% and 71.020% respectively, then an IC50 value of 121.176 µg/mL was obtained.

Keywords: mikroenkapsulasi, freeze drying, fikosianin, Spirulina plantensis, ABTS.

Formulation of Sunscreen Emulgel Preparation from Lemon Peel Extract (*Citrus* x *limon* (L.) Osbeck) with Carbopol 940 Variations in Vitro

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Abstract. Sunscreen preparations are cosmetic products that are designed to protect the skin from the harmful effects of ultraviolet (UV) radiation by absorbing and reflecting the radiation. Excessive UV exposure can cause skin damage and increase the risk of various skin diseases. Flavonoids are compounds found in lemon peel (Citrus x limon (L.) Osbeck) that have sunscreen activity. This study aims to determine the effect of the addition of Carbopol 940 as a thickening agent in the formulation of emulgels by evaluating the physical quality and UV protection activity. The concentrations of Carbopol 940 used were 1%, 1.5%, and 2%. This study used an in vitro experimental method with UV-Vis spectrophotometry, which showed that the three formulas with variations in Carbopol 940 concentration did not have a significant effect on sunscreen activity. However, based on physical quality tests, formulas 1 and 2 show physical quality results that meet the standards required for emulgel preparations.

Keywords: Lemon zest, Sunscreen, Carbopol 940

Analysis Of Patient Satisfaction Level With The Quality Of Pharmacy Services In The Pharmacy Installation Of The Jombang Regional General Hospital

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Abstract. Patient satisfaction assessments are used to measure performance and service levels. The Jombang Hospital Pharmacy Installation is a health facility that provides pharmaceutical services directly to patients. Based on observations, complaints were found regarding operational services. The aim of this research is to determine the value of patient satisfaction at the Jombang Hospital Pharmacy Installation based on the dimensions of physical facilities, reliability, responsiveness, assurance and empathy. This research is a quantitative descriptive study with a sample of 100 patients using the Servqual method with *non-probability sampling* and *accidental sampling* techniques. The research was carried out by distributing questionnaires, namely through the dimensions of tangible, reliability, responsiveness, assurance and empathy, and analyzed using a Likert scale and processing using scores. GAP data were analyzed using Wilcoxon analysis. The results show that the reality scores for all dimensions are in the range 3.36-3.46 while the expected scores are 3.58-3.62. This result is classified as very high. However, there is a GAP value in the range -0.4 to 0.4, but this difference is not significant (Sig. >0.05) based on the Wilcoxon test. The conclusion of this research is that the patient satisfaction score at the Jombang Hospital Pharmacy Installation is in the very high category according to the dimensions of physical evidence, reliability, responsiveness, assurance and empathy.

Keywords: Patient Satisfaction, Pharmaceutical Services, Servqual Method

Formulation And An Tibacterial Activity Testing Of Mouthwash Preparation From Red Leaf Shoot Extract (*Syzgium Myrtifolium Walp*) Against *Streptococcus Mutans* Bacteria

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Abstract. Tooth decay is a disease that causes damage to the tooth structure, starting from the surface and potentially spreading towards the pulp. Red leaf shoots (*Syzgium myrtifolium* Walp) contain compounds such as phenols, flavonoids, tannins, alkaloids, and triterpenoids that have antibacterial activity and can inhibit energy metabolism. This study aims to formulate a mouthwash from red leaf shoot extract that is effective against *Streptococcus mutans* bacteria. The extraction was carried out using the maceration method with 96% ethanol. Four *mouthwash* formulas with concentrations of 2%, 4%, 6%, and 8% were evaluated based on physical tests (organoleptic, homogeneity, viscosity, pH, and stability) as well as antibacterial activity using the diffusion method. The results showed that all formulas had good physical quality and demonstrated comparable antibacterial activity, with inhibition zones reaching 18.3 mm, similar to the positive control (21.3 mm).

Keywords: Antibacterial, red leaf shoots, red leaf extract, *mouthwash*.

Network Pharmacology of Turmeric Rhizome (*Curcuma longa* L.) as Antiinflamatory in Ulcerative Colitis

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Abstract. Ulcerative colitis is an inflammatory bowel disease characterized by mucosal inflammation, starting from the rectum and can spread throughout the colon. This study aims to identify proteins involved in UC, determine the target proteins of turmeric rhizome compounds as anti-inflammatory, and analyze the pharmacological profile of turmeric rhizome chemical compounds against disease proteins. The method used was NP, with data collection of compounds from KNApSAcK and Phytochem. Protein targets were identified through STRING, PubChem, STP, SEA and SuperPRED, validated using UniProt and visualized using Cytoscape. profile visualization showed interactions between target proteins involved in the pathophysiology of UC, such as JAK2, JAK1, GATA3, STAT6, IL4R, IL4, IL13, IL12RG, IL10, IL2, IL5, TLR4, TLR5, TLR2, NOD2, MAF, and NFE2L2 with turmeric rhizome compounds. These compounds include curcumin, bisdemethoxycurcumin, limonene, quercetin, alpha pinene, cineole, demethoxycurcumin, ribitol, stigmasterol, and guaicol. This combination forms a pharmacological network that has the potential to address UC.

Keywords: Ulcerative colitis, Network pharmacology, thurmeric, cytoscape

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Potential Of Spirulina Platensis on Antidiabetic Activity

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Abstract. *Spirulina platensis* is a microscopic *cyanobacterium* microalga that has filaments and is rich in nutrients, known for its various health benefits, including its potential as an anti-diabetic agent. The research method used is a literature review, conducted by searching for relevant scientific articles through electronic databases such as Elsevier, Google Scholar, the Directory of Open Access Journals (DOAJ), and PubMed. This study aims to examine the anti-diabetic activity of *Spirulina platensis* through the mechanism of α-glucosidase enzyme inhibition and increased insulin sensitivity. Bioactive compounds such as polysaccharides, phenolics, and bioactive peptides in *Spirulina platensis* are believed to play a role in reducing blood glucose levels, protecting β-pancreatic cells, and reducing oxidative stress. Experimental studies using in vitro and in vivo models have shown that *Spirulina platensis* extract can significantly lower blood sugar levels and improve resistance to diabetes complications. This potential provides opportunities for the development of natural supplements based on *Spirulina platensis* as a complementary therapy for diabetes patients. *Spirulina platensis* has the potential to be a safe and effective solution for supporting holistic diabetes management.

Keywords: *Spirulina platensis,* Antidiabetic

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Antibacterial Analysis of Zodia Leaf Essential Oil (*Euodia suaveolens*) against *Streptococcus sanguis* ATCC 10556 and *Porphyromonas gingivalis* ATCC 33277

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Abstract. Zodia is known as an exotic plant. However, several studies have shown that the plant contains essential oils (EO) that can be utilized as an antibacterial agent. This study aims to determine the antibacterial activity of zodia leaf EO against Streptococcus sanguis and Porphyromonas gingivalis. Zodia leaf EO was tested for its characteristics by yield, alcohol solubility, specific gravity, organoleptic and GC-MS. Antibacterial analysis was determined by the well diffusion inhibition zone method followed by determination of the MIC. The results of the plant leaf EO characteristic tests were a yield of 0.209%, a specific gravity of 0.956 ± 0.002 g/mL, its solubility was clear and there were no grains. The result of the GC-MS showed four main compounds: menthofuran, 1-li monene, evodone, and perilla acetate. The results showed that zodia leaf EO was able to inhibit S. sanguis with an average diameter at concentrations of 10, 15, 20 and 25%, namely 0, 1.08, 3.05, and 3.96 mm which indicated that a concentration of 10% had no antibacterial activity, while concentrations of 15, 20, and 25% showed antibacterial activities. P. gingivalis showed an average diameter of each concentration was 0, 0, 1.48, and 2.2 mm which indicated that concentrations of 10 and 15% had no antibacterial activities and concentrations of 20 and 25% showed antibacterial activities. The MIC of S. sanguis was a concentration of 30% and P. gingivalis was a concentration of 80%. This study showed that zodia leaf EO has a potential antibacterial activity against S. sanguis and P. gingivalis.

Keywords: essential oil, Streptococcus sanguis, Porphyromonas gingivalis, inhibition zone, minimum inhibitory concentration

Effect of Host Size Avicel PH 101 and Lactose Mixture on The Form and Dissolution of Glimepiride Interactive Mixture Tablets

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Abstract. This research is purposed to determine the effect of host size on the physical quality and dissolution of glimepiride interactive mixed tablets. Glimepiride is a class II drug in the Biopharmaceutical Classification System (BCS) with high permeability but low solubility. Interactive mixtures use micronized active substances attached to larger-sized hosts for uniformity of tablet content, reducing the risk of segregation and accelerating the dissolution process. This study used three host formulas with different sizes: Formula 1 (18/40 mesh), Formula 2 (20/40 mesh), and Formula 3 (30/40 mesh) with the proportion of Avicel PH 101 and lactose 1:1. All formulas were compressed using the direct felt method and tested for friability, hardness, disintegration time, and dissolution. The analysis of variance (one-way ANOVA) showed that host size significantly affected the physical quality of tablets. Smaller host sizes resulted in harder tablets, reduced friability, and accelerated dissolution. In addition, a small host size increases the contact area between the drug and solvent, accelerating the dissolution rate. Formula 3 (30/40 mesh) showed the best formula in the physical quality and dissolution tests, making it the optimal choice for improving the effectiveness of glimepiride interactive mixed tablets.

Keywords: Avicel PH 101, Host size, Interactive mixture Glimepiride, Lactose

Antibacterial Activity of Extract and Fractions Red Pomegranate Peel (Punica Granatum L.) Against the Bacteria Propionibacterium Acnes Atcc 11827 In Vitro

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Abstract. Acne occurs when the skin's oil glands are overactive, causing the pores to become blocked by excess fat deposits. Propionibacterium acnes ATCC 11827 is a normal flora bacterium that is often found on the skin, especially in sebaceous follicles, and plays a role in the process of acne formation. Red pomegranate skin contains secondary metabolite compounds including flavonoids, saponins, tannins, triterpenoids and alkaloids. The aim of this research was to calculate the Minimum Inhibitory Concentration (MIC) and Minimum Kill Concentration (KBM) values of the most active fraction on the growth of Propionibacterium acnes ATCC 11827. This research was carried out using themaceration extraction method with 96% ethanol as a solvent. Fractionation was carried out using n-hexane, ethyl acetate and water as solvents. Antibacterial activity test using the disc diffusion method with a concentration of 20%; 10%; 5% and diluted with a concentration series of 50%; 25%; 12.5%; 6.25%; 3.125%; 1.56%; 0.781%; 0.390%; 1.95%; 0.097%. The best antibacterial activity test results were shown in the ethyl acetate fraction with a concentration of 20% with an average inhibitor power of 21,83 mm. In the dilusion method, the concentration that indicates the Minimum Kill Concentration and Minimum Inhibitor Concentration at a concentration of 6,25%.

Keywords: Antibacterial, Red Pomegranate Peel (Punica granatum L.) and Propionibacterium acnes ATCC 11827.

Analysis Of the Implementation of Pharmacy Service Standards in Franchise Pharmacies in Surakarta City Area In 2024

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Abstract. Regulation of the Ministry of Health of the Republic of Indonesia Number 73 of 2016 states that the standards of pharmaceutical health services in pharmacies are divided into two activities, namely the management of pharmaceutical supplies, medical devices, and household health supplies. The research method used is observational with questionnaire instruments and interview sheets. The research results show that only a few parameters such as medication records, counseling, and home pharmacy services have not been implemented optimally. The conclusion of this study is that the implementation of pharmaceutical service standards in franchise pharmacies in Surakarta City is very appropriate (94.34%) for the management of pharmaceutical supplies, and appropriate (92.86%) for clinical pharmacy services.

Keywords: pharmaceutical service standards, franchise pharmacy

Antihyperglycemia Activity Test of Ethanol Extract of Pakcoy Leaves (*Brassica juncea (*L.) Czern.) And Pancreatic Histopathology in Mice (*Mus Musculus*) Induced by Alloxan

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Abstract. Hyperglycemia is a condition where blood sugar levels exceed normal limits. Pakcoy leaves exhibit antihyperglycemic properties. This study aimed to evaluate the antihyperglycemic activity, effective dosage, and pancreatic histopathological improvements of pakcoy leaf extract in alloxan-induced mice. The extract was obtained through maceration, and 30 male mice were divided into six groups: normal control, negative control, positive control, and groups receiving pakcoy leaf ethanol extract at doses of 420 mg/kgBW, 840 mg/kgBW, and 1680 mg/kgBW. Blood sugar levels were measured before induction and on days 3, 7, and 14 post-induction. Pancreatic histopathology was examined on day 15. Statistical analysis showed that the 420 mg/kgBW dose exhibited antihyperglycemic activity, while the 1680 mg/kgBW dose improved pancreatic histopathology in necrosis-damaged mice comparable to the positive control.

Keywords: antihyperglycemia, alloxan, pakcoy leaves, nekrosis damage

The Tonic Effect Etanol Extract Telang Leaf (*Clitoria ternatea* L.) Toward White Mice (*Mus musculus*) Males *Swiss Webster*

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Abstract. The telang leaf (*Clitoria ternatea L.*) is utilized in traditional medicine due to its active compounds, such as alkaloids, flavonoids, saponins, and essential oils. This study examined the tonic effects of ethanolic extract from telang leaf on male Swiss Webster mice and determined its effective dose. Extraction was conducted using the maceration method with 70% ethanol. The tonic activity test employed the *Natatory Exhaustion* and *Rotarod* methods, with parameters including swimming time and the duration the mice remained on the rotating rotarod. The negative control used 0.5% Na CMC, the positive control was caffeine at 13 mg/kg BW, and the telang leaf extract was tested at doses of 150, 300, and 450 mg/kg BW. Data were analyzed using the Shapiro-Wilk test, homogeneity test, One-Way ANOVA, and Tukey test. Results showed that the telang leaf extract exhibited tonic activity, with the most effective dose being 300 mg/kg BW.

Keywords: telang leaf (*Clitoria ternatea L.*), tonic, extract

Emulgel Formulation and Activity Test of Etanol Extract of Suji Leaves (Dracaena Angustifolia Roxb.) On Healing of Burns in White Rabbit (Oryctolagus Cuniculus)

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Abstract. Burns are a type of injury that can cause damage and changes to various human body systems. Suji leaf ethanol extract has the fastest activity in healing burn wounds at 7% concentration. This study developed suji leaf ethanol extract into an emulgel dosage formulation by varying the concentration of HPMC. Suji leaf ethanol extract was obtained by maceration method using 70% ethanol solvent. The 7% ethanol extract of suji leaves was made into emulgel preparations in 3 formulas with varying concentrations of HPMC, namely 3%, 3.5%, and 4%. The emulgel preparations were tested for physical quality, stability and healing activity of rabbit burns for 21 days by measuring the diameter of the burns. The results showed that the variation of HPMC in suji leaf ethanol extract emulgel preparation affects viscosity, spreadability, adhesion, stability and burn healing activity. Formula I with 3% HPMC concentration variation showed the best result based on one-way ANOVA.

Keywords: HPMC, emulgel, burns, Suji leaves (Dracaena angustifolia Roxb.), white rabbit (Oryctolagus cuniculus).

Activity Test of Ethanol Extract of Marigold Leaves (*Tagetes Erecta* L.) On The Healing of Burns in New Zealand Rabbits (Abstract)

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Abstract. Burns are wounds obtained from direct skin contact with high-temperature objects. Marigold leaves (*Tagetes erecta* L.) contain compounds such as flavonoids, tannins, saponins, triterpenoids and alkaloids. The purpose of this study is to determine the activity of Marigold leaf extract on burn healing, determine the most effective concentration, and determine the activity of the extract in increasing the number of fibroblasts. The test was divided into 5 groups: negative control (vaseline flavum), positive control (Mebo® ointment), and 3 variations in extract concentration, namely 1.5%; 2.5% and 5%. Observation of histopathological preparations using a microscope on the skin of rabbits. Statistical analysis was carried out on the results of the data obtained using ANOVA followed by the Post Hoc Test. The result of this study is that Marigold leaf extract has activity on burn healing with the most optimal concentration of 2.5% and has activity in increasing the number of fibroblasts.

Keywords: Burns, *Tagetes erecta*, Fibroblasts

The Factors That Influence Compliance with Taking Blood Supplement Tablets in Pregnant Women in the Working Area of the Gabus Community Health Center, Grobogan Regency

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Abstract. The low compliance of pregnant women in consuming blood supplement tablets as part of government programs can impede the prevention and treatment of anemia. In 2020, anemia cases in Grobogan Regency increased by 15,74%. This study aims to identify the factors influencing pregnant women's compliance with consuming blood supplement tablets. A cross-sectional analytical observational study was conducted involving 91 respondents who met the inclusion criteria at Gabus Community Health Center 1. The variables studied included knowledge, motivation, family support, and the role of health workers. Data were collected using questionnaires and analyzed through univariate, bivariate, and multivariable methods. The results revealed that 61,5% of respondents had insufficient knowledge and motivation, while family support and the role of health workers were relatively high at 59,3% and 86,3%, respectively. Family support was found to significantly influence compliance with blood supplement tablet consumption (p = 0,013). Therefore, family support is the most critical factor in ensuring pregnant women's compliance.

Keywords: Compliance, blood increasing tablets, anemia

Analysis of Patient Satisfaction with Pharmaceutical Services at the Outpatient Pharmacy Installation of UNS Hospital Surakarta in 2024

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Abstract. Patient satisfaction is an important indicator for evaluating the quality of hospital services, and plays an important role in improving public health. This study aims to describe the level of patient satisfaction and compare satisfaction between the morning and afternoon polyclinics at UNS Surakarta Hospital. This research uses a descriptive analytical observational method using a 20-question questionnaire and purposive sampling technique. Five indicators of satisfaction were analyzed: tangibles, reliability, responsiveness, assurance and empathy. Based on data from 384 respondents, the level of patient satisfaction is clear evidence (89%), reliability (88%), responsiveness (88%), assurance (91%), and empathy (89%). No significant difference was found between morning and afternoon clinic satisfaction (gap = 0.02). The guarantee dimension is the most dominant aspect with a total score of 5.567. This research highlights the importance of the assurance dimension in increasing patient satisfaction at UNS Surakarta Hospital.

Keywords: Expectations, Reality, Patient satisfaction

Tonicum Effect Test of Etanol Extract of Cardamom Fruit (*Amomum cardamomum* Willd.) On White Male Mice (*Mus musculus*)

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Abstract. Tonics are materials valuable for fortifying the body, enhancing control and vitality, and empowering muscle cell repair. Cardamom (*Amomum cardamomum* Willd.) contains flavonoid and alkaloid compounds with potential tonic effects. This research aimed to investigate the tonic effects and optimal dosages of cardamom ethanol extract on male white mice. In this experimental research utilized 50 male white mice (*Mus musculus*) each method uses 25 male white mice divided into five groups, negative control received 0.5% Na CMC, positive control received 100 mg/kg BW caffeine, and three groups received cardamom extract at 5,6; 11,2; and 22,4 mg/kg BW. Data analysis utilized SPSS. The study employed natatory exhaustion and hanging tests to assess endurance. Results indicate cardamom extract exhibits significant tonic effects on male white mice. The optimal dosage (22,4 mg/kg BW) has the most effective potential tonicum effect, with average percentage increase in swimming duration (125%) and average percentage increase in hanging duration (180%).

Keywords: *Cardamom fruit extract, tonicum effect*

Isolation and Characterization of α-Cellulose from Young Coconut Coir (*Cocos nucifera* L.) Using Microwave Irradiation Heating Method: A Sustainable Innovation

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Abstract. Cellulose is a key component with significant potential in various industrial applications. Young coconut coir (*Cocos nucifera L.*) contains a high cellulose content of approximately 43.44%, making it an attractive source for cellulose isolation. This study aims to isolate α-cellulose from young coconut coir using microwave irradiation heating methods, which include liquefaction, delignification, and bleaching stages. This method offers time efficiency and improved quality of results. The findings indicate that the optimal treatment for obtaining α-cellulose was achieved with a 5% H_2O_2 concentration at 500 W for 10 minutes, repeated three times, resulting in a yield of 22.37%. The characteristics of the isolated α-cellulose demonstrate good physicochemical properties, with FT-IR and SEM analyses confirming its quality. These results affirm that the microwave irradiation method effectively enhances the efficiency of the isolation process and the quality of the product, establishing young coconut coir as a sustainable source for cellulose production.

Keywords: α-Cellulose, *Cocos nucifera* L, Isolation, Microwave Irradiation Heating Method, Young Coconut Coir

The Relationship Between Knowledge and Side Effects on Compliance with Anti-Tuberculosis Drug Use in Tuberculosis Patients at Madiun Hospital

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Abstract. Tuberculosis (TB) is a disease caused by infection with the Mycobacterium tuberculosis bacteria in the lungs. TB treatment generally takes months and requires strict adherence to medication regimens to avoid the risk of bacterial resistance. This research aims to understand the correlation between the level of patient knowledge and the side effects of Anti-Tuberculosis Drugs (OAT) on patient compliance in using Anti-Tuberculosis Drugs. This study uses a descriptive correlation method with a cross-sectional approach, and the sample was selected through a purposive sampling method. Data collection was carried out by asking Tuberculosis patients who met the criteria to fill out the questionnaire directly. All data obtained were explained using SPSS statistical software, and data analysis was carried out systematically. The results of the study with 44 samples obtained more dominant results were in female gender as many as 22, age >45 years as many as 26, high education as many as 25, unemployed as many as 29 and duration of suffering >3 months as many as 28 respondents. The results obtained showed that there was a significant relationship between knowledge (p value = 0.000) and side effects (p value = 0.002) on compliance with the use of anti-Tuberculosis drugs at Dungus Hospital due to p value <0.05.

Keywords: Tuberculosis, Compliance, Knowledge, Side Effects, Anti-Tuberculosis Drugs (OAT)

Combination Activity Test of Areca Nut (Areca Catechu L.) And Figs (Ficus Carica L.) As Antihyperglycemia in White Mice Induced by Alloxan

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Abstract. Areca nut seeds and figs are plants that can be used as antihyperglycemia, because they contain flavonoid compounds, saponins, alkaloids, tannins and triterpenoids that can help the process of lowering blood sugar levels. The purpose of this study was to determine the effect of antihyperglycemia on blood sugar levels and body weight after a combination of areca catechu L.) and figs (Ficus carica L.) in alloxane-induced male white mice. The study used 40 male white mice divided into 8 groups. mice were fasted for 8-12 hours before alloxan induction. Mice that have been selected were grouped into 8 groups, namely Group 1 (normal group), Group 2 (negative control, Na CMC 0.5%), Group 3 (positive control, glibenclamide 0.65 mg/kg BW of mice), Group 4 (single extract of areca nut 560 mg/kg BW of mice), Group 5 (single extract of figs 560 mg/kg BW of mice), and 3 groups of a combination of ethanol extracts of areca nut and tin. Before the treatment of mice first induced alloxan i.p at a dose of 210 mg/kg BWB mice. The results of blood sugar data were analyzed using One Way Anova followed by Post hoc test. The results showed a single dose of extract and combination of areca cathecu L.) and figs (Ficus carica L.) were able to reduce blood sugar levels in mice with values that are not much different from the positive control test group, while testing of the body weight of mice that were carried out showed that the combination extract was not significantly different from the positive control.

Keywords: Antihyperglycemia, betel nut, figs, antidiabetic.

Cost Utility Analysis of Sulfonylurea Compared to DPP-4 Inhibitors as Type II DM Therapy at Regional General Hospital X in 2024

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Abstract. Type II Diabetes Mellitus is a chronic disease that requires a large amount of time and treatment costs, so it can affect a person's quality of life. Sulfonylureas and DPP-4 Inhibitors are a class of type II DM drugs that have differences in price and effectiveness, it is necessary to test the quality of life using the CUA pharmacoeconomic study. The study used patient medical record data, billing and questionnaires. QALY is a combination of quality and quantity of life from the DQOL questionnaire. The CUA value was obtained by calculating the ACER value by comparing the average costs with QALYs. The results of the study are the average total cost of Sulfonylurea and DPP-4 Inhibitor is IDR 17,551,663 and IDR 18,665,100 with QALY values of 1.6339 (utility 0.7413) and 1.3918 (utility 0.7127). So it can be concluded that the oral anti-diabetic (OAD) most cost utility is sulfonylurea.

Keywords: CUA, QALY, Type II DM, Sulfonylurea, DPP-4 Inhibitor.

Cost Utility Analysis of Erythropoietin Complement Therapy in Chronic Renal Failure Patients Undergoing Hemodialysis at Regional General Hospital X in 2024

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Abstract. Hemodialysis is a therapy for CKD patients to replace kidney function which has a significant correlation with the occurrence of anemia. Erythropoietin, folic acid and iron are several anemia therapies, where differences in price and effectiveness will affect utility. So an observational Cost Utility Analysis study is needed with a quantitative approach using medical record data, patient bills, EQ-5D-5L and EQ-VAS questionnaires. The study results obtained from 33 patients on combination therapy with EPO with B9, showed an average total cost of IDR 173,515,653 with a QALY of 1.13 (utility 0.61), an EQ-VAS scale utility of 72.27. Meanwhile, in 31 patients, the combination of EPO with Fe had an average total cost of IDR 174,681,200 with a QALY of 1.06 (utility 0.58) with an EQ-VAS scale utility of 62.25. So it can be concluded that the antianemia therapy with the most cost utility is a combination of EPO with B9.

Keywords: Folic acid, CUA, Erythropoietin (EPO), Hemodialysis, Iron

Test of Analgetic Potential Activity of Ethanol Extract of Melinjo Fruit Peel (Gnetum gnemon L.) Against Male White Mice with Comparison of Writhing test Method and Tail flick Method

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Abstract. Pain is a sensory feeling that causes discomfort, and is an indicator of damage to body tissue. Ways to reduce pain, with analgesics to relieve pain. Melinjo fruit peel (Gnetum gnemon L.) contains flavonoid compounds that can inhibit the enzyme cyclooxygenase, decrease prostaglandin production and relieve pain. The extraction method of melinjo fruit peel uses maceration with 70% ethanol solvent. Analgesic activity test using tail flick and writhing test. Parameters observed were tail flick and body writhing of mice with negative control CMC-Na 0.5%, positive control (mefenamic acid and dolgesik), dose of melinjo fruit peel extract 27.46; 54.93; and 109.86 mg/kg BW. Data results were analyzed using One way ANOVA. The results showed that ethanol extract of melinjo fruit peel (Gnetum Gnemon L.) has analgesic activity in male white mice, marked by significant differences in negative control. The effective dose of melinjo fruit peel extract is 109.86 mg/kg BW.

Keywords: analgesic, melinjo fruit peel (Gnetum gnemon L.), tail flick, writhing test

Effect of Variation of HLB (*Hydropylic-Lipophylic Balance*) Value on the Characteristics of Cream Preparation of Ethanol Extract of Basil Leaves (*Ocimum X Africanum* Lour.) as Antibacterial Against *Staphylococcus Epidermidis* Bacteria

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Abstract. Acne vulgaris also known as acne, is one of the most common skin problem characterized by the appearance of blockage and subsequent inflammation of the oil gland ducts found on the facial skin. Basil leaves contain main compounds that have antibacterial properties, namely flavonoids, alkaloids, tannins, saponins that work by damaging the permeability of the The extraction method used is maceration with 70% ethanol and testing antibacterial activity using the pitting method. The results obtained by formula 6 with HLB 12 have the physical quality of the cream and the average value of the inhibitory power is 16.1 mm.

Keywords: Cream, HLB, Basil Leaf, Acne, *Staphylococcus epidermidis*

The Antibacterial Activity Test of a Combination of Ethanol Extracts of Cassava Leaves (*Manihot Esculenta* Crantz) And Binahong Leaves (*Anredera Cordifolia* (Ten.) Steenis) Against Bacteria *Escherichia Coli* Atcc 25922

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Abstract. *Escherichia coli* is a bacterium that can cause diarrhea, meningitis, sepsis, and urinary tract infections. Cassava and binahong plants are two examples of plants that can suppress the growth of *E. coli* bacteria. Flavonoids, saponins, and tannins include compounds found in these leaves that function as antibacterials. The extraction method of cassava leaves and binahong leaves uses maceration with 70% ethanol solvent. Determination of Minimum Kill Concentration of cassava leaf extract and binahong leaf by dilution method. The combination of the two extracts was made in the ratio (1:1), (1:3) and (3:1). Determination of antibacterial activity by disc diffusion method, and pattern of combination effect using paper tape method. Minimum Kill Concentration of cassava leaf extract was 6.25% and binahong leaf extract was 12.5%. The inhibition power of 1:1 combination was 15.86 ± 0.513, 1:3 combination was 16.06 ± 0.208, and 3:1 combination was 18.40 ± 0.556. The most effective combination in inhibiting the growth of *E. coli* bacteria is the 3:1 combination with a synergistic effect against *E. coli* bacteria.

Keywords: Antibacterial, Cassava Leaf (Manihot esculenta Crantz), Binahong Leaf (Anredera cordifolia (Ten.) Steenis), *Escherichia coli.*

The Effect of Carbopol 940 Concentration Variation as A Gelling Agent of Aloe Vera (*Aloe Vera* L.) Ethanol Extract Gel Preparation on Physical Quality and Stability.

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Abstract. Each formula was tested for physical quality with organoleptic parameters, pH, homogeneity, viscosity, spreadability, and adhesion. Physical quality stability test with synergistic parameters. Irritation test with edema and erythema parameters. and Anti-aging test using rabbit back skin checked with a skin analyzer. The data obtained were tested using the T-Test method and continued with the Turkey post hoc test. Irritation test with edema and erythema parameters. The anti-aging test was checked on the rabbit's back skin using a skin analyzer. The data obtained were tested using SPSS with the T-Test and continued with the Turkey post hoc test. Variations of Aloe Vera Ethanol extract anti-aging gel have good physical quality. The safety test of the preparation does not irritate. The concentration in the best anti-aging activity test is Aloe Vera Ethanol extract gel at a Carbopol base concentration of 1.2%.

Keywords: Aloe vera L., Anti-aging, Gel

Evaluation of the Rationality of the Use of Atihypertensive Drugs for Geriatric Patients in the Inpatient Installation of Dr. Moewardi Surakarta Regional Hospital Period 2023

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Abstract. Hypertension is a condition where there is an increase in systolic and diastolic blood pressure≥ 140/90 mmHg. The purpose of this study was to determine the rationality of the description and use of antihypertensive drugs in geriatric patients at the Inpatient Installation of Dr. Moewardi Surakarta Regional General Hospital for the period 2023. This research was a non-experimental with retrospective data collection with purposive sampling method. This data will be analyzed for the potential occurrence of *Drug Related Problems* (DRPs) based on PCNE V9.1. The results of the study showed that the most frequently used therapy was a *Calcium Channel Blocker* (amlodipine) 19.5%. The incidence of rationality in antihypertensive medication among geriatric patients at the Dr. Moewardi Regional Hospital during 2023, based on PCNE V9.1, revealed instances of suboptimal drug therapy (33.32%), untreated symptoms (2.74%), non-compliance with guidelines (22.47%), incomplete treatment despite indications (2.74%), and overly frequent regimens (18.63%)

Keywords: Geriatics, Hypertension, Rational Use of Medicene

Antidiabetic Activity Test of Ethanol Extract of Ranti Leaves (*Solanum Nigrum* L.) On Male White Rats Induced by Alloxan

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Abstract. Ranti leaves have flavonoid content can lower rate glucose blood. The aim of this research is to know effects provided by the extract ethanol ranti leaves in mice white induced males alloxan in lower rate glucose blood and ability repair histopathology pancreas. This study used 30 rats shared into 6 groups consisting of treatment. This study used 30 rats divided into 6 treatment groups. Blood glucose level examination using the GOD-PAP method. On the 15th day of mice dissected and the pancreas was removed for made preparation histopathology. The data was analyzed using the SPSS. This studyindicate that ranti leaf extract exhibits activity in lowering blood glucose levels and improving the histopathology of the pancreas in rats. A dose of 400 mg/kgBB is the most effective, showing a reduction in blood glucose levels comparable to glibenclamide as a positive control.

Keywords: Ranti leaf (*Solanum nigrum* L.), antidiabetic, extract, alloxan, histopathology of pancreas

Antidiabetic Activity Test of Etanol Extract of Chayote Leaves (Sechium Edule) On Alloxan Induced White Male Rats

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Abstract. Chayote (*Sechium edule*), a member of the Cucurbitaceae family, is recognized for its potential antidiabetic properties due to the presence of secondary metabolites such as flavonoids, saponins, and tannins. This study aimed to evaluate the antidiabetic activity of ethanol extract from chayote leaves in alloxan-induced diabetic rats and assess its impact on pancreatic histopathology. Six treatment groups, each consisting of five rats, were administered alloxan intraperitoneally. Blood glucose levels were measured on days 1, 3, 7, and 14 using the GOD-PAP method. On day 15, the rats were sacrificed for analysis. The results indicated that chayote leaf extract significantly reduced blood glucose levels and improved pancreatic histopathology. Notably, a dosage of 84 mg/kg body weight was found to be the most effective, achieving glucose reduction comparable to that of glibenclamide, a standard antidiabetic medication.

Keywords: chayote leaves, blood glucose levels, antidiabetic, alloxan, histopathology of pancreas

Atomic Absorption Spectrophotometry Analysis of Lead Metal Contamination in Herbal Medicine Through Dry and Wet Destruction

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Abstract. This study examines the levels of Pb metal contamination in jamu pegal sciatica circulating in Surakarta, and evaluates the best deconstruction method for analyzing Pb levels using Atomic Absorption Spectrophotometry (SSA). Three jamu pegal sciatica samples that have BPOM packaging were randomly selected, with the treatment of dry deconstruction and wet deconstruction using HNO3 and H2O2 oxidizing agents (3:1). The results showed that in dry deconstruction, Pb levels in samples 1, 2, and 3 were 0.4110 ± 0.238 mg/Kg; 0.4444 ± 0.095 mg/Kg; and 0.3803 ± 0.305 mg/Kg, respectively. Meanwhile, in wet deconstruction, Pb levels in samples 1, 2, and 3 were 0.2540 ± 0.095 mg/Kg; 0.0938 ± 0.053 mg/Kg; and 1.0477 ± 0.198 mg/Kg, respectively. The analysis results show that both dry and wet deconstruction produce comparable Pb levels.

Keywords: Atomic Absorption Spectrophotometry (SSA), deconstruction, Pb.

Formulation And Physical Stability Test of Antibactery Creme of Etanol Extract of Kemangi Leaves (*Ocimum X Africanum* Lour.) Against The Bacteria Staphylococcus Aureus with Variations *Staphylococcus Aureus* Bacteries with Variations of HLB Value of Emulgator

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Abstract. Acne is a condition of skin problems due to clogged pores accompanied by inflammation. Basil leaf extract (*Ocimum x africanum* Lour) contains flavonoids, tannins, alkaloids, and saponins. 96% ethanol solvent is used for the extraction of basil leaves through maceration method. There are 6 cream formulas: HLB 8 (Formulas 1 and 4), HLB 10 (Formulas 2 and 5), and HLB 12 (Formulas 3 and 6) which will be tested for organoleptic, homogeneity, viscosity, adhesiveness, spreadability, emulsion type, stability, and activity to inhibit *Staphylococcus aureus* bacteria. Formula 6 with HLB 12 at the ratio of emulgators span 60 and tween 60 (1.4%: 3.6%) provides good stability and the broadest bacterial inhibition among other formulas, which has an average inhibition value of 13.53mm.

Keywords: Basil leaf (*Ocimum x africanum* Lour), tween 60, span 60, cream, HLB

Antihyperglycemic Activity Test of Javanese Pepper Leaf Ethanol Extract (*Piper Retrofractum* Vahl) and Pancreatic Histopathology in Male White Mice (*Mus Musculus*) by Aloxane

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Abstract. Diabetes mellitus is a metabolic disease that causes hyperglycemia. Javanese chili (*Piper retrofractum* Vahl) contains flavonoids, alkaloids, tannins and saponins that are efficacious as a blood sugar level lowerer. The purpose of this study is to determine the activity and effective dose of antihyperglycemia of javanese chili leaf extract, as well as to determine the ability to improve pancreatic histopathology in male mice that have been induced by aloxan. The maceration extraction of Javanese chili leaves is carried out with a 70% ethanol solvent. *As many as 30 Mus musculus* mice were induced with 1% aloxan, then given Na CMC negative control treatment, glibenchamide positive control**,** extract treatment dose of 1.4, 2.8, 5.6 mg/kgBB mice. Blood sugar levels were measured before and after treatment with *an easy test glucometer*, then mice were sacrificed and their pancreas were taken for histopathological testing. The data was tested using *the One Way Anova* and *Paired T-test*. The results showed that all javanese chili leaf extracts could reduce blood sugar levels and significantly reduce the percentage of necrosis (Sig. <0.05).

Keywords: Aloxan, Anti-hyperglycemia, Javanese chili leaf, Histopathology

Antidepressant Activity Test of Ethanol Extract of Cinnamon Bark (*Cinnamomum Burmannii* Nees & T. Nees Blume) On Male White Mice (*Mus musculus* L.) Using The *Forced Swimming Test* (FST) and *Open Field Test* (OFT) Methods

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Abstract. Depression is a psychological illness characterized by decreased concentration, anhedonia, fatigue, hopelessness, and helplessness as well as suicidal ideation due to decreased serotonin. Antidepressant testing using male white mice (Mus musculus L.) as test animals with OFT and FST methods. Cinnamon was macerated using 96% ethanol. There were 5 treatment groups, positive control fluoxetine 0.026 mg/20grBW mice; negative control Na CMC 0.5%; ethanol extract of cinnamon bark; 1.4; 2.8 and 5.6 mg/20grBW mice. The test animals were induced depression with stressors for 7 days. The parameters observed were immobility time and locomotor movement. The results showed that the ethanol extract of cinnamon bark had antidepressant activity at all doses with an effective dose of 2.6mg/20grBW of mice ($p<0.05$) in both methods. The dose of 2.6mg/20grBW of mice had a % increase in locomotor movement of 72.4% and a % decrease in immobility time of 54.4%.

Keywords: Cinnamon, Anti-depressant, OFT, FST

Antidepressant Activity Test of Ethanol Extract of Java Chili Fruit (*Piper retrovactum* Vahl) On Male White Mice (*Mus musculus* L.) Using The Forced Swimming Test (FST) Method

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Abstract. Depression is a mental health disorder caused by decreased levels of neurotransmitters in the brain. Antidepressant testing using male white mice (Mus musculus L.) as test animals using the Forced Swimming Test method. Javanese chili fruit was soxhletized using 95% ethanol solvent. There were 5 treatment groups, negative control Na CMC 0.5%; positive control fluoxetine 1.3 mg/20gBW of mice; ethanol extract of Javanese chili fruit 200; 400; and 800mg/20gBW of mice. The test animals were induced to be depressed by forced swimming for 5 minutes every day for 7 days. The parameters observed were immobility time. The results of the study showed the most effective dose to significantly reduce immobility time in mice was a dose of 400 mg/kg BW of mice with a % decrease in immobility time of 57.15%.

Keywords: Antidepressant, Javanese chili fruit, *forced swimming test*.

Uji Aktivitas Antibakteri Fraksi *N*-Heksana, Etil Asetat Dan Air Ekstrak Daun Srikaya (*Annona Squamosa* L.) Terhadap Bakteri *Propionibacterum Acnes* Atcc 11827

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Abstract. *Acne* is a skin disease caused by *Propionibacterium acnes* bacteria. Srikaya leaves contain terpenoids, alkaloids, and flavonoids, saponins that can inhibit bacterial growth. Fractionation is a method to separate compounds based on the level of polarity. The purpose of this study was to determine the antibacterial activity of *n*-hexane, ethyl acetate, and water fractions of sugar apple leaf extract and to determine the KHM and KBM values of the most active fraction against *Propionibacterium acnes* ATCC 11827 bacteria. This study used maceration method with 96% ethanol solvent. Fractionation used *n*-hexane, ethyl acetate, and water solvents. Positive control used clindamycin and negative control used tween 80 concentration 5%. Antibacterial testing used disc diffusion method with 5%, 10%, 20% concentration and dilution method with 50%; 25%; 12.5%; 6.25%; 3.12%; 1.56%; 0.78%; 0.39%; 0.19% concentration. Data analysis using *non-parametric Kruskal-Wallish*. The results showed that the most active fraction was 20% ethyl acetate fraction with an average inhibition zone diameter of 15.28 mm. Testing with the dilution method of KBM results of the ethyl acetate fraction of sugar apple leaves at a concentration of 6.25%.

Keywords: Srikaya leaves, *Propionibacterium acnes*, fractionation, antibacterial, diffusion, dilution

Analgesic Activity Test of Ethanol Extract of Lempuyang Gajah Rhizome (*Zingiber Zerumbet* (L.) Roscoe Ex Sm.) On Male White Mice (*Mus Musculus)* Using *Tail Flick* and *Writhing Test* Methods

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Abstract. Pain is an abnormal sensory and emotional event associated with tissue damage. Elephant rhizome of (*Zingiber zerumbet* (L.) Roscoe ex Sm.) can be utilized as an alternative pain treatment. The purpose of this study was to determine whether ethanol extract of *Zingiber zerumbet* rhizome has analgesic activity and what is the effective dose as an analgesic. Elephant *Zingiber zerumbet* rhizome was extracted by maceration with 96% ethanol solvent. Test animals were divided into 5 treatment groups: negative control group (CMC Na), positive control group (tramadol and mefenamic acid), extract group (doses of 25 mg/kgBB, 50 mg/kgBB, and 100 mg/kgBB). Tests using the Tail Flick and Writhing Test methods. Data analysis using Shapiro-Wilk test, Levene test, One Way Anova followed by Post Hoc. The results showed that ethanol extract of *Zingiber zerumbet* can provide analgesic activity with an effective dose of 100 mg/kgBB mice.

Keywords: Pain, analgesic, rhizome *Zingiber zerumbet, tail flick, writhing test*

Antibacterial Activity Test of Moringa Leaf Ethanol Extract Combination (*Moringa Oleifera* Lam) And Binahong Leaves (*Anredera Cordifolia*) Against *Escherichia Coli* Bacteria

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Abstract Moringa leaf extract and binahong leaf contain alkaloids, flavonoids, phenol, tannins, saponins, and triterpenoid compounds as antibacterial. This study aimed to determine the antibacterial activity of the combination of ethanol extract of moringa leaves and binahong leaves on the growth of *Escherichia coli* ATCC 25922 bacteria. The extract was made using the maceration method with 70% ethanol solvent, and phytochemical testing was carried out. Determination of the Minimum Killing Concentration of moringa leaf extract and binahong leaves using the dilution method. The combination of moringa leaf extract and binahong leaves was made with a ratio of (1:1), (1:2), (2:1). Determination of antibacterial activity was carried out using the disc diffusion method and the results of the inhibition zone diameter were analyzed using SPSS. The combination effect pattern was carried out using the paper tape method. The results showed that moringa leaf extract had a Minimum Killing Concentration value of 6.25% and binahong leaves 12.5%. The 1:1 combination has an inhibitory power of 14,73 ± 0.50. The combination of 1:2 is 14,96±0,45. The combination of 2:1 is 16,2±0,55. The combination of 2:1 is the most effective in inhibiting the growth of *E. coli* bacteria and provides a synergistic combination pattern.

Keywords: Antibacterial, Escherichia coli, Moringa leaves, Binahong leaves

Antihiperglicemia Activity Test of Eggplant Pokak Fruit Extract (*Solanum Torvum*) On Wistar Diabetes Rats

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Abstract. Medicinal plants from natural ingredients that have antihyperglycemia effects are pokak eggplant fruit (*Solanum torvum*). Eggplant pokak fruit contains flavonoids, alkaloids, tannins, saponins that function as antioxidants. This study aims to determine the antihyperglycemia activity and determine the effective dose of pokak eggplant fruit extract against diabetic wistar male rats. Pokak eggplant fruit extract was extracted using maceration method. Test animals were divided into 6 groups, namely normal control, negative control, positive control of metformin, and administration of eggplant fruit extract doses of 100 mg, 200 mg, 400 mg/kg body weight of rats. This study was conducted using alloxan induction at a dose of 150 mg/kg BW of rats to increase blood sugar levels in rats. Eggplant fruit extract at a dose of 400 mg/kg BB rats showed antihyperglycemia activity comparable to the positive control of metformin 45 mg/kg BW rats.

Keywords: Eggplant pokak fruit, blood sugar levels and metformin.

Antibacterial Activity Test Of 70% Ethanol Extract Combination of Leaves Guava (*Psidium Guajava* L.) And Binahong Leaves (*Anredera Cordifolia*) Against Bacteria *Escherichia Coli* Atcc 25922

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Abstract. Guava and binahong leaves contain flavonoids, tannins, saponins, and alkaloids, which have antibacterial properties against Escherichia coli. This purpose of this study to determine the activity of the combination of ethanol extract of guava leaves and binahong leaves against E. coli bacteria. The extracts were prepared using a maceration method with 70% ethanol and underwent phytochemical testing. Antibacterial activity was assessed through dilution and disc diffusion methods, with results analyzed using SPSS version 25. The findings revealed that guava leaf extract had a Minimum Inhibitory Concentration (MIC) of 6.25%, while binahong leaf extract had an MIC of 12.5%. The combinations showed varying inhibition powers: the 1:1 mix had 14.03 ± 0.50 mm, the 1:2 mix had 14.13 ± 0.32 mm, and the 2:1 mix exhibited the highest activity at 15.56 ± 0.25 mm. The 2:1 combination was identified as the most effective, demonstrating synergistic properties *against E. coli*.

Keywords: Antibacterial, *Escherichia coli*, Guava leaves (*Psidium guajava* L.), Binahong leaves (*Anredera cordifolia*)

Antibacterial Activity Test of Endophytic Bacteria Isolate Of (*Hibiscus Rosa Sinensis* L.) Flower Against the Bacteria *Staphylococcus Aureus*

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Abstract. Endophytic bacteria are microorganisms residing in plant tissues that can produce bioactive compounds with antibacterial properties. This study focused on the Hibiscus flower (*Hibiscus rosa sinensis* L.), known for its secondary metabolites effective against bacteria. The research aimed to identify the genera of endophytic bacteria and evaluate their antibacterial activity against Staphylococcus aureus. Pure isolates of endophytic bacteria were obtained from the hibiscus flowers, with identification based on morphological, Gram staining, and biochemical tests. Various fermentation times (24, 48, and 72 hours) were tested for antibacterial activity using the disc diffusion method. Six genera were identified: *Escherichia*, *Aeromicrobium*, *Pseudomonas*, *Paenibacillus*, *Bacillus*, and *Klebsiella*. The *Klebsiella* genus showed the highest inhibition zone diameter (10.22 mm) after 72 hours of fermentation, indicating that longer fermentation enhances antibacterial efficacy due to secondary metabolites produced by the endophytic isolates

Keyword: Antibacterial, endophytic bacteria, *Hibiscus rosa sinensis* L. flower, *Staphylococcus aureus*

Antibacterial Activity Test of Betadine Leaf Extract and Fraction (*Jatropha multifida* L) against *Staphylococcus aureus* and *Pseudomonas aeruginosa* bacteria

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Abstract. This study aims to determine the most active antibacterial activity of Betadine leaf extract and fraction against *Staphylococcus aureus* and *Pseudomonas aeruginosa* bacteria. Betadine leaf extract using maceration method with 96% ethanol solvent and fractionation using *n*-hexane, ethyl acetate and water solvents. Antibacterial activity test using disc diffusion method and dilution method. The results showed that betadine leaf extract and fraction have antibacterial activity. The diffusion results showed that the ethyl acetate fraction with a concentration of 50% had the most active antibacterial activity with an average diameter of 14.40 mm (50%); 13.17 mm (25%); 10.47 mm (12.5%) in *Staphylococcus aureus* and 10.8 mm (50%); 10.5 mm (25%); 8.37 mm (12.5%) on *Pseudomonas aeruginosa*. From the dilution method, MIC could not be determined because the solution was too cloudy, but MBC was determined at a concentration of 3.12% against *Staphylococcus aureus* bacteria and a concentration of 25% against *Pseudomonas aeruginosa*.

Keywords: Antibacterial; Betadine leaves; Ethyl acetate, *n*-hexane and water fractions; *Pseudomonas aeruginosa*; *Staphylococcus aureus*

Analysis Of Timbal Metal Leaching in Green Tea *(Camellia Sinensis)* And Black Tea *(Camellia Sinensis (L.) O. Kuntze)* By Wet and Dry Destruction

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Abstract. The research aims to measure the lead content in green tea and black tea and determine the best destruction method for analysis. Tea has medicinal properties but is often contaminated by heavy metals like lead due to vehicle and industrial pollution. Samples were taken from two stores with wet and dry destruction treatments, as well as variations of oxidizers HNO3 and H2SO4. The tests were conducted using atomic absorption spectrophotometry and the results were analyzed with % recovery and One Way ANOVA tests. The results show that the highest Pb content in store 1 was in wet green tea at 1.4 mg/kg, and the lowest was in wet black tea at 1 mg/kg. Store 2 wet black tea 1.2 mg/kg, lowest wet green tea 1.1 mg/kg. Both meet the BPOM standard of ≤ 2 mg/kg. Analysis using the wet and dry destruction methods showed no significant difference ($p > 0.05$).

Keywords: *Camellia sinensis*; lead; destruktive; Atomic Absorption Spectrophotometry

Use Of Internet Media for Drug Information Search Among Health Students at Universitas Setia Budi

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Abstract. This study aims to describe the use of internet media in searching for drug information by health students at Setia Budi University. Using descriptive survey method with non probability sampling technique with quota sampling. Most respondents often use the internet (33.3%), with the main reason being speed in getting information (40%). Searching for information via the internet has sufficient influence (70.8%), is considered quite trusted (58.3%), valid (59.4%), and useful (59.4%) by respondents. Information that is easy to understand is the main factor (33.1%). Respondents used Google search engine, Safari (67%), halodoc application (51%), website www.halodoc.com (68.3%) to search for medicine information on the internet. The most searched information was about the name or content of the medicine (19.8%), while the most searched type of medicine was medicine for coughs and colds (15.5%). These results show a tendency to search for drug information every day.

Keywords: Internet, Drug Information, Students

Antibacterial Activity Test of Endophyte Bacterial Isolates of Kecombrang Flowers (*Etlingera Elatior*) Against *Staphylococcus Aureus* Bacteria Atcc 25923

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Abstract. This study aims to determine the antibacterial activity of endophytic bacterial isolates of kecombrang flower against Staphylococcus aureus. And to find out which endophytic bacterial isolate produces the highest antibacterial activity. The research was conducted in several stages, namely isolation of endophytic bacteria, identification of endophytic bacteria, fermentation of endophytic bacterial isolates and testing the activity of endophytic bacteria as antibacterials. The treatment groups in this study were ciprofloxacin 5µg as a positive control, disks without bacteria as a negative control, and fermented supernatant as a test group. The results showed that there were 5 genus of endophytic bacterial isolates from kecombrang flower, namely Bacillus genus, Providensia genus, Serratia genus, Pseudomonas genus and Lactobacillus genus. Serratia genus 72-hour fermentation has an inhibition of 11.95 ± 0.56. Serratia genus 72-hour fermentation is the most effective isolate in inhibiting the growth of bacteria S. aureus ATCC 25923.

Keywords: antibacterial, endophytic bacteria, Staphylococcus aureus bacteria, kecombrang flowers

Antibacterial Effect of Combination of Turmeric Extract (Curcuma Domestica Val.) And Ginger Emprit (Zingiber Officinale Rosc.) Against Esscherichia Coli by Paper Tape Method

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Abstract. *Escherichia coli* is a pathogenicbacteria that causes diarrheal diseases. Treatment of bacterial infections using antibiotics has the potential to cause resistance. Herbal plants are widely used as alternative medicines, including turmeric rhizomes and emprit ginger which are known to have antibacterial activity. This study aims to determine the effect of the combination of turmeric extract and ginger emprit on *E.coli bacteria* using the paper tape method. The antibacterial activity test was carried out by the method of dilution, diffusion and its combination effect with the paper tape method. The dilution test showed MBC results at a concentration of 25%. Disc method diffusion test to determine the best combination in inhibiting *E.coli* growth by combining extracts in ratios (1:1), (1:2), and (2:1). The statistical data show the best combination in comparison (1:2). The combination effect tested with the paper tape method showed that the combination of the two was indifferent, meaning that it did not affect each other.

Keywords: Antibacterial, Escherichia coli, ginger, turmeric.

Uji Aktivitas Enzim Superoksida Dismutase (SOD) dalam Ekstrak Enzim Daun Stroberi (*Fragaria x ananassa* Duchesne) dengan Metode Riboflavin-*Nitroblue Tetrazolium* (RB-NBT)

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Abstract. Antioxidants are compounds that can inhibit the activity of these radicals. Superoxide dismutase (SOD) enzymes can prevent the formation of free radicals. The strawberry plant (*Fragaria x ananassa* Duchesne is one of the plants that has SOD enzyme activity. This study aims to determine the activity of the superoxide dismutase enzyme in strawberry leaf extract before and after purification. This study used strawberry leaf samples. The research stage begins with plant determination and then enzyme extraction with PBS and centrifuge. Enzyme purification uses 25, 50, and 75% ammonium sulfate precipitation and dialysis. The determination of the total protein content of crude extract and dialysis extract was determined using *the Lowry* method and the testing of SOD enzyme activity of crude extract and dialysis extract using the RB-NBT method was then analyzed *by one-way* ANOVA. The results showed that the enzyme extract of strawberry leaves had a total protein content of 13.558 mg/ml and the enzyme extract from dialysis with ammonium sulfate concentration was 4.080 consecutively; 8,174; 14,806 mg/ml. The percentage value of inhibition of crude extract of strawberry leaves was 17.885%, and the extract from consecutive dialysis was 20.821; 26,015; 72.086%.

Keywords: *Fragaria x pineapple* Duchesne, antioxidant, superoxide dismutase, RB-NBT

Antibacterial Activity and Antibiofilm Test of Ethanol Extract of Matoa Leaves (*Pometia pinnata* J. R & G. Forst) Against *Pseudomonas aeruginosa* Bacteria (Abstract)

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Abstract. *Pseudomonas aeruginosa* is a multi-drug resistant (MDR) pathogen known for its biofilm growth, making it difficult to eliminate. This study aims to determine the effectiveness of ethanol extract from matoa leaves as an antibacterial and antibiofilm agent, specifically by inhibiting biofilm formation using the Crystal Violet biofilm assay. The results showed that the ethanol extract of matoa leaves contains alkaloids, flavonoids, tannins, and triterpenoids, which exhibit antibacterial and antibiofilm activity against *P. aeruginosa*. The minimum inhibitory concentration (MIC) was found to be 25 mg/mL. The inhibition zones produced by ethanol extract at concentrations of 75, 50, and 25 mg/mL were 13.33 mm, 12.16 mm, and 10.8 mm, respectively, compared to the positive control Ciprofloxacin 5 µg, which resulted in an inhibition zone of 35.67 mm. The biofilm inhibition percentages at concentrations of 25 and 50 mg/mL were 12.34% and 21.51%, respectively. From the percentage results, the IC_{50} value was determined, averaging 27.43 mg/mL.

Keywords: Antibakteri; antibiofilm; daun matoa; *P. aeruginosa*

In Vitro Antioxidant Activity Testing of Mangrove Leaves Ethanol Extract (*Rhizophora Mucronata*) And Antihyperglycemia Activity Testing in Mice (*Mus Musculus* L.)

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Abstract. Mangrove leaves (*Rhizophora mucronata*) have chemical content, flavonoids, tannins, triterpenoids, saponins and alkaloids. The purpose this study was to determine the ethanol extract mangrove leaves has antioxidant activity and reduce blood glucose levels in male white mice induced by alloxan. Antioxidant activity testing using the DPPH method with quercetin comparator standard and antihyperglycemia activity testing which divided into 6 groups, Group I negative control (0.5% CMC suspension), group II positive control (glibenclamide 0.65 mg/kg BB), group III mangrove leaf extract dose (31.25 mg/kg BB), group IV mangrove leaf extract dose (62.5 mg/kg BB), group V mangrove leaf extract dose (125 mg/kg BB), and group VI normal control. The results showed that mangrove leaf extract has antioxidant activity with an IC_{50} value of 29.05 ppm having a very strong katergori. The effective dose of mangrove leaf extract that can reduce blood glucose levels is in group IV mangrove leaf extract at a dose of 31.25 mg/kg BB.

Keywords: antioxidant, the mangrove leaves, DPPH, antihyperglycemic

Combination Activity of Butterfly Pea Flower Extrac (Clitoria Ternatea L.) And Areca Nut Seeds (Areca Catechu L.) To Mice (Mus Musculus) Induced ByAlloxan

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Abstract. Butterfly pea flowers and areca nut seeds are plants that can be used as antihyperglycemia, because has alkaloid, flavonoid, tannin, and saponin compounds, steroids/triterpenoids that can help the process of lowering blood sugar levels. This research aims to determine the antihyperglycemic effect after being given a combination of butterfly pea flower extract (Clitoria ternatea L.) and areca nut seeds (Areca catechu L.) in male mice induced by alloxan. Extraction of butterfly pea flowers and areca seeds used the maceration method with 70% ethanol solvent. The antihyperglycemia test was carried out using 40 male mice divided into 8 groups. Group I normal control, group II negative control (Na CMC 0,5%), group III positive control (glibenclamide 0,65 mg/Kg BW), group IV (single butterfly pea flower extract 560 mg/Kg BW), group V (single extract areca nut seeds 560 mg/Kg BW), group VI (combination of butterfly pea flower extract 140 mg/Kg BW and areca nut seeds 420 mg/Kg BW), group VII (combination of butterfly pea flower extract 420 mg/Kg BW and areca nut seeds 140 mg/Kg BW), group VIII (combination of butterfly pea flower extract 280 mg/Kg BW and areca nut seeds 280 mg/Kg BW. Mice are induced using alloxan i.p at a dose of 150 mg/Kg BW. The blood sugar level data obtained are analyzed by using One Way Anova followed by Posts hoc test. The results of this research showes that single extract doses or a combination of butterfly pea flower (Clitoria ternatea) and areca nut (Areca catechu) extracts were significantly able to reduce blood sugar levels in mice that had been induced by alloxan compared to negative controls, with the best results shown in the 1:1 extract combination group (280 mg/Kg BW butterfly pea flower and 280 mg/Kg BW areca nut).

Key words: Antihyperglycemia, butterfly pea flower, areca nut plant.

Testing The Antioxidant Activity Nasturtium Flower Extract (*Tropaeolum majus* L.) Nanosuspension Using of DPPH Methods

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Abstract. The increasing incidence of diseases caused by free radicals encourages research on antioxidant compounds, one of which is from nasturtium flowers (*Tropaeolum majus* L.) which contains phenolic compounds. This study aims to increase the antioxidant activity of nasturtium flower extract through nanoparticle technology in the form of nanosuspension, which is made by sonoprecipitation method using a variety of stabilizers. After extraction, compound identification, and determination of total phenolics and flavonoids, the nanosuspension characteristics were tested, including particle size and antioxidant activity using the DPPH method. The results showed that nanosuspensions of nasturtium flower extract could be produced with particle sizes ranging from 989.5-1214.9 nm, with the best stabilizer being Pluronic F-68. Antioxidant activity test shows that formula 2 has an IC_{50} value of 1866.8897 ppm, lower than the pure extract which has an IC_{50} value of 2842.3616 ppm. In conclusion, nasturtium flower extract nanosuspension is effective in increasing antioxidant activity.

Keywords: *Tropaeolum majus* L., nanosuspension, extract, nasturtium flower, DPPH, IC_{50}, antioxidant, stability

Tyrosinase Enzyme Inhibition Activity of Extract Nanosuspension Azolla (*Azolla microphylla* Kaulf)

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Abstract. Azolla microphylla has potential as an anti-hyperpigmentation agent by inhibiting melanin formation, which is regulated by the tyrosinase enzyme. This study aimed to develop a nanosuspension formulation of Azolla microphylla extract to enhance its tyrosinase inhibitory activity. The ethanol extract of Azolla microphylla was obtained using the ultrasound-assisted extraction method with 70% ethanol. Nanosuspensions were prepared by the high-pressure homogenization method with variations in polymer stabilizers, surfactants, and combinations of both. Characterization included particle size, polydispersity index, zeta potential, particle morphology, pH, viscosity, and storage stability. The results showed that the nanosuspension with a combination of PVA and Pluronic F68 stabilizers had a particle size ranging from 204 to 323 nm and exhibited the best stability, with a zeta potential value of -30.17 mV. Nanosuspensions of Azolla microphylla extract demonstrated a three-fold increase in tyrosinase inhibitory activity compared to the crude extract, although it was still less potent than kojic acid, the positive control.

Keywords: *Azolla microphylla*, nanosuspension, stabilizer, particle size, tyrosinase inhibitor

Antidiabetic Activity Test of Ethanol Extract of Suji Leaves (*Dracaena Angustifolia*) On Aloxan Induced Wistar Rats

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Abstract. The terpenoid and flavonoid compounds contained in suji leaf extract (*Dracaena angustifolia*) act as diabetes drugs. The purpose of this study is to determine the antidiabetic activity of suji leaf ethanol extract, its ability to inhibit necrosis in the pancreas, improve pancreatic cells in male rats of the wistar strain and determine the effective dose of suji leaf ethanol extract as an antidiabetic. The extraction of 96% ethanol maceration was used in the study. A total of 30 rats were divided into 6 treatment groups. The mice were induced with aloxan 150 mg/kgBB intraperitoneally, their blood sugar levels were measured and a histopathological preparation of the pancreatic organ was made with *HE* staining. Suji leaves have antidiabetic activity with the highest percentage of reduction in sugar levels at a dose of 200 mg/kgBB. The histopathological results of the pancreatic organs of mice showed that ethanol extract of suji leaves at a dose of 400 mg/kgBB could regenerate cells β the pancreas of mice with almost the same effect in the positive group.

Keywords: suji leaves, ethanol extract, antidiabetic, aloxan, blood glucose, histopathology of pancreatic organs.

The Effect of Education Through the TikTok Media Platform on the Level of Knowledge and Self-Medication Behavior of Ulcer Disease in Health and Non-Health Students at Setia Budi University

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Abstract. Ulcer disease is common among university students, this encouraging self-medication. This study aims to evaluate level of knowledge and self-medication behavior of ulcers in USB health and non-health students before and after education. The study also examined the effect of TikTok platform as educational medium and the relationship between knowledge level and self-medication behavior. This research was an experimental quantitative study with pretest and posttest design, involving total of 194 respondents. The sample was taken through purposive samplingbased inclusion and exclusion criteria. Statistical analysis used Wilcoxon test. The results showed significant difference between the level of knowledge and self-medication behavior of health and non-health students, with health students having better level knowledge and behavior. The Wilcoxon test was (0.000 < 0.05), indicating that education through TikTok was effective in improving knowledge and behavior of ulcer self-medication. In addition, here is a weak relationship between knowledge level and self-medication behavior.

Keywords: *TikTok education platform, knowledge level, ulcer self-medication behavior, health and non-health students.*

Docking Molecular Analysis and Pharmacokinetic Profile Prediction of Chemical Constituents of Soga Leaf (*Peltophorum pterocarpum*) as Antidiabetic

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Abstract. Soga leaf (Peltophorum pterocarpum) is reported to have biological activity as antidiabetic therapy. This study using the molecular docking method to determine the affinity score and interaction models of the chemical constituent of soga leaves and target protein, and to predict ADME profile of chemical constituent. Result of molecular docking found that friedelin, cycloleucalenol, lupenone, ergosterol peroxide, and quercetin-3-O-β-D-galactopyranoside had best affinity score. Interaction model of friedelin, cycloeucalenol, and lupenone, similar with interactions of target protein and native ligand. Pharmacokinetic prediction results show that friedelin and lupenone have best ADME profile predictions.

Keywords: Antidiabetes, soga leaves, docking molecular

Uji Aktivitas Antibakteri Dari Isolat Bakteri Endofit Bunga Gemitir (*Tagetes Erecta* L.) Terhadap Bakteri *Staphylococcus Aureus*

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Abstract. The search for sources of bioactive compounds continues to be carried out along with the emergence of new diseases, the existence of resistance to antibiotics leads to the treatment of infections caused. One source of bioactive compounds used to fight antibiotic resistance is endophytic microbes. Endophytic bacteria can produce chemical compounds that have effects on health, especially endophytic bacteria isolated from the medicinal plant of the gemitir flower (*Tagetes erecta* L.). Plant determination is followed by sterilization of tools and materials then gemitir flowers are isolated in planted in Nutrient Agar (NA). are Vogel Johnson Agar (VJA), Mueller Hilton Agar (MHA), Nutrient Agar (NA) and Brain Heart Infusion (BHI), Media SIM, Media KIA, Media LIA, Media Citrate. The results showed that as many as 5 endophytic bacterial isolates were successfully isolated from *Tagetes erecta L* A total of 5 isolates were found in different bacterial genera, namely *bacillus* and *pseudomona*.

Keywords: antibacterial, Staphylococcus aureus, fermentation, endophytic microbes, marigold flowers.

Sepdhita Indrie Pramudianti, 2024. Formulation And Physical Quality Testing of *Body Butter* Preparations of Avocado Seed Extract (*Persea Americana Mill.*) As Antioxidant Activity with Variations in The Concentration ofThe Emulgator Span 60 And Tween 60.

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Abstract. The skin protects the body from sunlight and pollution, which can damage it. Antioxidants neutralize free radicals to prevent cell damage. Avocado seeds contain flavonoids, tannins, and saponins, which have antioxidant activity. This study tested the antioxidant activity of avocado seed extract and body butter formulation with variations of tween 60 and span 60 emulsifiers. Avocado seed extract is made through maceration with 96% ethanol and contains flavonoids, tannins, and saponins which have high antioxidant activity. The formulated body butter was tested for its physical quality, including organoleptic, homogeneity, viscosity, spreadability, adhesion, stability, and pH. Antioxidant activity was tested using the DPPH method to calculate the IC50 value. As a result, avocado seed extract showed an IC50 of 34.89 ppm, while body butter with formula II (tween 60 5% and span 60 5%) produced the lowest IC50 (376.72 ppm), indicating the best antioxidant activity.

Keywords: Avocado seeds, antioxidants, *body butter*, DPPH.

Optimasi Hpmc Dan Carbopol 940 Pada Sediaan Emulgel Ekstrak Daun Pepaya (*Carica Papaya L.*) Dengan Metode *Simplex Lattice Design* (Sld)

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Abstract. Papaya leaves are plants that can live in tropical regions like Indonesia. Papaya leaves were extracted with 96% ethanol and tested for compound content, such as flavonoids, alkaloids, tannins and saponins. This research aims to examine the effect of the combination of HPMC and Carbopol on the physical quality of papaya leaf extract emulgel preparations, as well as determining the optimum concentration of both using the Simplex Lattice Design method. The extract was then formulated in emulgel with varying concentrations of HPMC and Carbopol. Physical quality tests carried out include pH, viscosity, adhesion and spreadability. The test results are entered into the SLD to determine the optimal formula. The results showed that increasing HPMC concentration and decreasing Carbopol increased pH and viscosity. The thicker the emulgel produced, the longer the adhesion will last. The optimal formula was obtained with a Carbopol concentration of 1.66% and HPMC 2.84%.

Keywords: Papaya leaves, Simplex Lattice Design, Carbopol 940, HPMC.

Optimization Of Papaya Leaf Extract Lotion Preparation (Carica Papaya L.) With Variations of Cetyl Alcohol and Glycerin Concentrations Using the Simplex Lattice Design Method

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Abstrack. This study aimed to develop an optimal lotion formula using papaya leaf extract (Carica papaya L.) with the Simplex Lattice Design method. Papaya leaf extract was obtained by macerating the leaves in 96% ethanol, and its composition was analyzed using TLC and tube tests. The lotion formulation varied the concentrations of cetyl alcohol and glycerin, and the optimal formula was determined using Design Expert software. The lotion's physical properties, including organoleptic tests, pH, viscosity, spreadability, and adhesion, were evaluated. Results showed that cetyl alcohol significantly increased pH and viscosity, while glycerin improved spreadability and adhesion. The optimal formula, with 2.39% cetyl alcohol and 14.61% glycerin, resulted in a lotion with a pH of 6.36, viscosity of 2824.07 cP, spreadability of 6.91 cm, and adhesion time of 5.94 seconds, showing promising potential for skin-softening benefits.

Keywords: papaya leaves, lotion, Simplex Lattice Design, cetyl alcohol, glycerin

Antioxidant Activity Test and *Peel Off* Gel Mask Formulation of Pagoda Flower Extract (*Clerodendrum paniculatum* L.) with Variations in The Concentration of HPMC and PVA as *Gelling Agents*

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Abstract. The pagoda flower (Clerodendrum paniculatum L.) is one of the ornamental plants that can be developed as a medicinal or cosmetic plant. Pagoda flowers contain chemical compounds, namely flavonoids, tannins, alkaloids, and terpene compounds that can be used as antioxidants. The manufacture of pagoda flower extract is carried out by maceration using 70% ethanol. The extract was then formulated into a peel off gel mask preparation with variations in PVA concentrations, namely F4 (8%), F5 (9%) and F6 (10%) as well as HPMC concentrations of F4 (3%), F5 (4%) and F6 (5%). The antioxidant activity test of the peel off gel mask of pagoda flower extract was carried out by the DPPH method (2,2-diphenyl-1-pikrylhydrazyl). Testing the physical properties of peel off gel masks includes organoleptic, homogeneity, pH, viscosity, adhesion, spreadability, drying time, and stability with the cycling test method. The results of this study show that the physical properties of the preparation meet the standard of good peel off gel mask requirements. IC50 results obtained from F4; 121.29 ppm, F5; 113.02 ppm, and F6; 94.37 ppm.

Keywords: *Peel off* gel mask, antioxidant, dpph, pva, hpmc

Antibacterial Activity Test of Kepel Leaf Extract Fraction (Stelechocarpus Burahol, Hook F&Th.) Against the Bacterium Propionibacterium Acnes and Detection of Active Fraction Content

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Abstract Kepel leaf (Stelechocarpus burahol, Hook F&Th.) has antibacterial activity. The objective was to determine the most active antibacterial fraction of kepel leaf extract against Propionibacterium acnes bacteria, determine the value of inhibitor diameter and KBM and detect the content of active fractions. The method of diffusion with disc discs. Dilution method and Thin-layer Chromatography. The results showed that the most active water fraction, tested by the diffusion method, obtained a resistance diameter of 21.53±0.66. The water fraction tested by the dilution method had a KBM value of 2%. The water fraction contains alkaloid compounds and tannins.

Keywords: Antibacterial, Propionibacterium acnes, kepel leaf, extraction, fractionation

Optimization Of Papaya Leaf Extract Cream Preparation (Carica Papaya L.) With A Combination of Stearic Acid and Triethanolamine on Physical Quality Using the Simplex Lattice Design (Sld) Method

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Abstract. Papaya leaves contain flavonoids, alkaloids, tannins, and saponins with antiseptic, anti-inflammatory, antifungal, and antibacterial properties. This study evaluates the effect of combining stearic acid and triethanolamine on the physical quality of papaya leaf extract cream and its optimal formula. Extraction was carried out using maceration with 96% ethanol and concentrated using a vacuum rotary evaporator. Chemical contents were analyzed using TLC and tube tests. The cream formula was developed with 8 combinations from the Design Expert Simple Lattice Design, using 15%-17% stearic acid and 2%-4% triethanolamine. Tests on pH, viscosity, adhesion, and spreadability showed results meeting quality standards. The optimal formula combines 15.20% stearic acid and 3.79% triethanolamine, producing cream with superior physical properties and potential for topical applications.

Keywords: Cream, Stearic acid, triethanolamine, SLD

Hydrogel Innovation Using Taro Stems and Shrimp Waste for Early Prevention of Wound Infections

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Abstract. Wound infections are global health problems, including in Indonesia, Based on research in 2018 basic health research by Indonesian ministry of health record wound prevalence in indonesia at 9.2%. This emphasizes the importance of effective wound care to prevent infection and complications. This research focuses on the development of innovative healthcare products that sustainably utilize the potential of natural resources with hydrogel formulation chitosan base from shrimp shell waste, combined with taro stem extract, with varying concentration (10%, 15%, and 20%). The extraction process uses a simple aeropress method and is eco-friendly, producing chitosan with 80% yield and a degree of deacetylation of 78%. FTIR analysis identified key functional groups such as O–H, N–H, C–H, and C–O. In vivo testing on mice that hydrogel showed accelerating the healing of the incision wound with 10% taro stem extract concentration was most effective with wound healing achieved by 9 days, and hydrogel's pH was 6, which is considered safe for human skin.

Keywords: aeropress, chitosan, hydrogel, taro stalk

Activity Test and Formulation of Essence Aide from Saccharomyces Rice Ferment Filtrate (Srff) As Anti-Aging In Vivo

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Abstract. *Saccharomyces Rice Ferment Filtrate* (*SRFF*) is rice fermented with instant yeast containing *Saccharomyces cerevisiae*. *SRFF* filtrate contains phenolics and alkaloids that are formulated into an *essence* preparation with potential as *anti-aging*. This study aims to determine the best concentration of *SRFF essence* formula as *anti-aging*. The results of the physical quality test of rice fermentation include organoleptic, pH, and temperature tests. The results of fermentation made *essence* with the concentration of active ingredients used *SRFF* 5% incubation period of 1 day and *SRFF* 10% incubation period of 3 days. Physical quality testing of *essence* includes organoleptical, homogeneity, pH, viscosity, and stability tests. *Anti-aging essence* activity testing with collagen, elasticity, and moisture parameters. Based on the results of *essence* physical quality testing, 5% *essence* has good results according to the range of test requirements. The most effective concentration is 5% *essence*, because with a small dose it already provides *anti-aging* activity.

Keywords: *Anti-aging, Essence, In vivo, SRFF*

The Effect of Health Literacy and Access to Health Information on Blood Sugar Control of Type 2 Diabetes Mellitus Patients at UNS Hospital

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Abstract. Diabetes mellitus is one of the serious chronic diseases that affects quality of life and requires high costs. This study aims to analyze the effect of health literacy and access to health information on blood sugar control of patients with diabetes mellitus at UNS hospital. This study used a quantitative approach with a cross-sectional design. research subjects (N = 46) with sampling techniques carried out by purposive sampling. Data analysis using spearman correlation and multiple linear regression. The results of this study showed no significant relationship between health literacy and access to information with blood sugar control (p> 0.05). The conclusion of this study is that although theoretically important, these two factors did not have a significant effect on blood sugar control in this study.

Keywords: Type 2 Diabetes Mellitus, Health Literacy, Access to Health Information, Blood Sugar Control

Physical Quality Test and Anti-Aging Activity Test of Serum from Saccharomyces Rice Ferment Filtrate (Srff) With 73% Concentration on Rabbit Back

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Abstract. UV-A rays increase ROS in the skin, leading to aging. Saccharomyces rice ferment filtrate (SRFF) 5% acts as an anti-aging agent. This study examines SRFF's potential, the effect of xanthan gum variations (0.25, 0.5, and 0.75%) on serum quality, stability, and anti-aging activity. SRFF was obtained by fermenting 5 g of rice in 100 mL aquadest with Saccharomyces cerevisiae for 24 hours at room temperature. Serum evaluation included organoleptic tests, pH, viscosity, homogeneity, stability, and irritation tests, using ANOVA and paired t-tests for data analysis. Results showed all formulas met physical quality standards, with viscosity increasing and pH decreasing as xanthan gum concentration increased. No irritation was observed in rabbit tests. The 0.5% xanthan gum formula demonstrated the best anti-aging activity, improving collagen (37.00±4.69%), elasticity (30.40±3.97%), and moisture (28.40±3.36%), making it the most stable and effective formulation.

Keyword: Antiaging, Efficacy, SRFF serum, xanthan gum

Determination of Total Flavonoid Content and Antioxidant Activity Test of *n*-Hexane, Ethyl Acetate, And Water Fractions from Patchouli Leaf (*Pogostemon cablin*) Using the DPPH Method

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Abstract. Patchouli leaves (*Pogostemon cablin*) are known to contain flavonoid compounds that can be used as antioxidants. This study aims to determine the total flavonoid content and antioxidant activity of the extract, n-hexane fraction, ethyl acetate, and water of patchouli leaves (*Pogostemon cablin*) using the DPPH method. Patchouli leaf powder (*Pogostemon cablin*) was macerated using 96% ethanol solvent, the extract obtained was then fractionated with n-hexane, ethyl acetate, and water solvents. Determination of total flavonoid content was carried out using the aluminum chloride colorimetric method. Antioxidant activity testing was carried out using the DPPH method. The results showed that the ethyl acetate fraction of patchouli leaves had the highest total flavonoid content of 1.615 ± 0.0591% and antioxidant activity with a very strong category which showed an IC50 value of 17.3909 ± 0.1327 ppm, followed by the extract, water fraction, and n-hexane fraction of patchouli leaves (*Pogostemon cablin*).

Keywords: Patchouli leaves (*Pogostemon cablin*), fractionation, total flavonoids, antioxidant activity, DPPH methode.

Antioxidant Activity Test of Ethanol Extract, N-Hexane Fraction, Ethyl Acetate Fraction, and Water Fraction from Red Bajakah Tampala Stem (Spatholobus Littoralis Hassk.) Using the DPPH Method

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Abstract. Antioxidant components found in red bajakah tampala stem (Spatholobus littoralis Hassk.) have the ability to counteract free radicals and have antioxidant activity. Antioxidant activity was evaluated against DPPH using ethanol p.a as the solvent and measured through UV-VIS spectrophotometry. The study's findings revealed an ethanol extract of the stem of the red bajakah tampala (Spatholobus littoralis Hassk.) that contained secondary metabolite components, including triterpenoids, flavonoids, phenols, tannins, and saponins. compared to the quercetin standard, which had an IC_{50} value of 7.9338 ± 0.0267 ppm, this analysis demonstrated that the extract, n-hexane fraction, ethyl acetate, and water all exhibited antioxidant activity with IC50 values of 26.9032 ± 0.0731, 24.0793 ± 0.1509, 12.8726 ± 0.0303, and 57.2304 ± 0.3302 ppm. According to the study's findings, the ethyl acetate fraction exhibits antioxidant activity with a very strong category, measuring 12.8726 ± 0.0303 ppm in comparison to other samples.

Keywords: *Red tampala bajakah stem, extract and fraction of red tampala bajakah stem, antioxidants, DPPH*

Stimulant Activity of Green Arabica Coffee Bean Extract (*Coffea arabica* L.) with Roasted Arabica Coffee Bean Extract (*Coffea arabica* l.) on Male White Mice

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Abstract. Central nervous system (CNS) stimulants are drugs that can stimulate the cerebrum medulla and spinal cord. Increasing work activity patterns can cause fatigue. The aim of this research was to determine the potential of green arabica coffee bean (*Coffea arabica* L.) extract and roasted arabica coffee bean (*Coffea arabica* L.) as a central nervous system (CNS) stimulant. Testing the stimulant activity using natatory exhaustion method. This study used 8 test groups, each group consisting of 5 male white mice. The results of the study showed that arabica coffee bean extract (*Coffea arabica* L.) has the potential as a stimulant activity in mice. Natatory exhaustion testing showed that after administration of coffee bean extract there was an increase in swimming activity in mice. The most effective dose of arabica coffee bean extract (*Coffea arabica* L.) was green arabica coffee bean extract (*Coffea arabica* L.) with a dose of 2.23 mg/kg BB.

Keywords: green arabica coffee bean, roasted arabica coffee bean, stimulant activity.

Determination Of Total Flavonoid Levels and Antioxidant Test Of N-Hexane, Ethyl Acetate, And Water Fractions from Black Soybean Seeds (Glycine Soja) Using the Dpph Method

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Abstract. Free radicals can trigger various diseases, making antioxidants essential in neutralizing their effects. Black soybeans (Glycine soja) are rich in compounds like flavonoids that act as antioxidants. This study analyzed the total flavonoid levels and antioxidant activity in ethanol extracts, n-hexane, ethyl acetate, and water fractions of black soybean seeds. Antioxidant activity was evaluated using the DPPH method, while total flavonoid content was assessed with the colorimetric method. The findings revealed that the ethyl acetate fraction had the highest flavonoid content (1.72 ± 0.13%) and the strongest antioxidant activity (IC50: 27.43 ± 0.24 ppm), categorized as very strong. Overall, the study concluded that the ethyl acetate fraction demonstrated superior antioxidant properties and flavonoid levels, while the water fraction also showed very strong activity. The n-hexane fraction exhibited strong antioxidant activity, though not as potent as the other fractions.

Keywords: Black soybeans (*Glycine Soja*); antioxidant activity; total flavonoids; fractionation; DPPH method

Antibacterial Activity of Combination of Kaffir Lime Leaf (*Citrus hystrix* DC) and Cherry Leaf (*Muntingia calabura* L.) Extracts Against *Staphylococcus aureus* Bacteria

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Abstract. The bacterial infection caused by *Staphylococcus aureus* can be treated with antibiotics. Kaffir lime (*Citrus hystrix* DC) and cherry (*Muntingia calabura* L,) leaves contain alkaloids, flavonoids, tannins, saponins, and terpenoids, known for their antibacterial properties. This study aimed to evaluate the antibacterial activity of a combination of kaffir lime and cherry leaf extracts against *S. aureus*. The kaffir lime leaves were extracted by maceration using 70% ethanol, while cherry leaves were extracted using 96% ethanol. The chemical compounds were identified, and antibacterial activity was tested by the dilution method to determine the Minimum Inhibitory Concentration (MIC). MIC values were combined in ratios of (1:1), (1:2), and (2:1). Antibacterial activity of the combinations was evaluated by the disk diffusion method. The most effective combination was further tested using the paper disc method for combination patterns. Data were analyzed statistically using the Shapiro-Wilk test, followed by one-way ANOVA and Post Hoc tests. The results showed the MIC for the kaffir lime leaf extract was 5%, and for cherry leaf extract, it was 10%. The disk diffusion test revealed the most effective combination was at a ratio of (2:1), with an inhibition zone of 19.35±0.33 mm, indicating a synergistic effect.

Keywords: *Staphylococcus aureus*; *Citrus hystrix* DC; *Muntingia calabura* L.; extracts combination; antibacterial activity; synergism.

Anti-Acne Activity Test of Robusta Green Coffee Bean Ethanol Extract *(Coffea Canephora Var. Robusta)* On Rabbit Back Skin Induced By *Propionibacterium Acne* Atcc 11827

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Abstract. Robusta green coffee beans (*Coffea canephora var. robusta*) contain alkaloids, tannins, and flavonoids. Phenolic compounds contain chlorogenic acid which can prevent the growth of positive and negative gram bacteria by entering cells and damaging the structure of bacterial cell walls. The purpose of this study is to determine the anti-acne activity of ethanol extract from robusta green coffee beans (*Coffea canephora var. robusta*) on the bare backs of rabbits induced by *Propiobacterium acne* bacteria. Robusta green coffee bean powder was extracted by the maceration method using 96% ethanol. The coffee bean extract was made in 3 concentration variations of 25%, 50%, and 75% with a positive control (Sariayu acne care face and back solution) and a negative control (Vaseline). Each product was tested by the in vivo method on the backs of rabbits and induced with *P. acne*. The parameters observed were the diameter of the acne and the percentage of healing by macroscopic means. The data was analyzed with SPSS. The results of the study revealed that on the 20th day, the ethanol extract from robusta green coffee beans at a concentration of 75% produced a percentage of 96.69% and a positive control with a healing percentage of 99.35%, so that it had a positive effect on treating the acne and the results of the analysis using the Tukey's-b method can be said to be significant with a positive control.

Keywords: anti-acne, *Coffea canephora var. robusta, Propionibacterium acne*

Antibacterial Activity Test of Combination of Kersen Leaf (*Mutingia calabura* L) and Moringa Leaf (*Moringa oleifera* L.) Extracts Against Staphylococcus aureus Bacteria

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Abstract. Kersen leaves (Muntingia calabura L.) and Moringa leaves (Moringa oleifera L.) contain compounds that have antibacterial properties, including flavonoids, saponins, tannins, and alkaloids. The purpose of this study was to determine the potential of a combination of kersen and moringa leaf extracts in inhibiting the growth of Staphylococcus aureus. The method used in this study was dilution test to determine the minimum inhibitory concentration (MIC) then continued with the disc diffusion method. The most effective combinations were then subjected to paper tape tests to determine the pattern of synergistic, additive, or antagonistic combinations. Data results were analyzed with SPSS test. The study showed that kersen leaf extract had an MIC value of 10% and moringa leaf had an MIC of 5%. In the dilution test, the most effective inhibition diameter was the combination (1:2) with a diameter of 19.06 ± 0.37. The effect of the combination (1:2) showed a synergistic combination pattern.

Keywords: Staphylococcus aureus, Muntingia calabura LMoringa oleifera L., combination of extracts, antibacterial activity, synergistic.

Formulation And Testing of Antioxidant Activity of *Body Butter* Preparations from Mangois (*Gracinia Mangostana* L.) Skin Extract Dpph Method

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Abstract. Free radicals contribute to skin damage, and mangosteen rind contains phenolic compounds like xanthones that serve as natural antioxidants. This study formulated body butter from mangosteen rind extract with variations in Tween 60 and Span 60 emulsifier concentrations, evaluating their effects on adhesion, spreadability, and viscosityA 1.5% mangosteen rind extract was obtained via maceration with 96% ethanol. The formulations underwent a 6-cycle cycling test at 4°C and 40°C, followed by physical testing (adhesion, spreadability, viscosity, and pH) The results showed that all formulas produced homogeneous, thick, soft, oily body butter with a vanilla aroma and varying colors. Formula 2 had the best pH (6.90), Formulas 3 and 6 exhibited the best spreadability, Formulas 1 and 4 had the best adhesion, and Formulas 3 and 6 showed the best viscosity. Formula 2 also demonstrated the highest antioxidant activity with an IC50 value of 149.94. Thus, Formula 2 displayed the best physical quality.

Keywords: body butter, mangosteen rind extract, Tween 60, Span 60, antioxidant activity.

Resilience in Parents of Children with Autoimmune

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Abstract. Autoimmune diseases in children are increasing, autoimmune disease is one of the life-threatening diseases. The diagnosis of an autoimmune disease in a child causes stress and anxiety for parents. Parents' lives are also greatly affected because caring for and treating children with autoimmunity is different from caring for children in general. This condition can cause fatigue, anxiety and worry for parents because of the challenges it presents. In this situation, the ability of parents to resist and recover from stress, called parental resilience, plays a critical role. The ability of parents to cope well with stress and reduce the effects of stress can be achieved with the presence of resilience. **The purpose of this study** was to investigate the life experiences of parental resilience of parents of children with autoimmune from a qualitative perspective. **Methods:** A phenomenological approach was used. Purposive sampling was used to recruit parents of children with autoimmunity, data were collected using interview techniques, and data were analyzed using thematic analysis. **Results** showed that three themes were identified: emotional reactions to their children's illness, coping strategy, perceived social support, and gratitude. The most prominent factors in resilience were family support and gratitude, and there were different stages in the resilience process for parents. **Conclusions:** This study identified specific factors that influence the resilience of parents who have children with autoimmune.

Keywords: Parental resilience, autoimmune, social support

Formulation And Activity Test of Serum from Srff (Saccharomyces Cerevisiae Rice Ferment Filtrate) With 72 Hour Fermentation Time as Anti-Aging In Vivo

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Abstract. Aging is a state in which the skin begins to experience a progressive decline in function, one of which can be caused by free radicals. Free radicals damage the skin through oxidative stress with degradation of collagen and elastin. The utilization of fermentation in the anti-aging cosmetic industry is gaining popularity because it contains antioxidants that help fight free radicals that cause skin aging. This study used fermentation of 10 grams of rice with 100 ml of distilled water and Saccharomyces cerevisiae yeast for 72 hours to produce SRFF (Rice Fermented Yeast Juice). The fermentation result was processed into serum with Na CMC base (1%, 2%, and 3%) to test its anti-aging effect on the back of rabbits exposed to UV-A light. The results showed that formula 2 had anti-aging activity with collagen percentage of 116.06%, elasticity of 90.64%, and moisture of 284%. Statistically, Formula 2 was not significantly different from the positive control ($p>0.05$), but had a decrease in pH value on stability.

Keyword : *Anti-aging,* serum, Na CMC, SRFF

Antihyperglychemic Activities Of Ethanol Extract, Ethyl Acetate Fraction, N-Hexane Fraction, And Water Fraction Of Telang Flower (*Clitoria ternatea* L) And Pancreatic Histopatological Picture In Aloxan-Induced Male Mice

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Abstract. Telang flower (Clitoria ternatea L) contains flavonoid compounds to reduce blood sugar levels and prevent tissue damage due to oxidative stress. This study aims to determine the effect of ethanol extract and telang flower fraction on blood glucose levels, body weight, and the effect on aloxan-induced mouse pancreatic beta cells. A total of 30 male mice were divided into 6 treatment groups, namely group I (negative control of CMC Na 0.5%, group II (positive control of glibenchamide), group III (extract 200 mg/kg BB), group IV (ethyl acetate fraction 55.32 mg/kg BB), group V (n-hexane fraction 15.37 mg/kg BB), and group VI (water fraction 65.79 mg/kg BB). The treatment was given for 14 days with measurements of blood sugar levels and body weight on days 0, 3, 7, and 14. Then the test animals in euthanasia were taken from the pancreas and made histological preparations observed at a magnification of 40 x 10. The results of the analysis were observed by the One-Way Anova test and the Tukey test. The results showed that the most effective dose as an antihyperglycemic was the ethyl acetate fraction at a dose of 55.32 mg/kg BB.

Keywords: *Clitoria ternatea* L., antihyperglicemic, alloxan

Preliminary Screening on Components Selection of a Quercetin-Loaded Self-Nanoemulsifying Drug Delivery System Formulation

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Abstract. Quercetin has been reported as a group of flavonoids with high antioxidant activity but with poor solubility, thus requiring modification to enhance its bioavailability. Self-nanoemulsifying drug delivery system (SNEDDS) is able to facilitate solubility improvement for non-polar entities. An isotropic mixture of oil, surfactant, and co-su
rfactant is required to ensure the formation and stability of SNEDDS. Therefore, the selection of these SNEDDS components is crucial. This study focused on the preliminary screening to appropriately select the oil, surfactant, and co-surfactant used for a quercetin-containing SNEEDS formulation. To highlight the nanoemulsion regions, pseudoternary phase diagrams of selected oil and s-mix were visualized. In addition, the evaluations include droplet size, PDI, % transmittance, self-emulsification time, zeta potential, and thermodynamic stability.

Keywords: Quercetin, Screening, SNEDDS

Servqual Analysis and Job Satisfaction with Swot Method To Develop Strategies For Improving Service Quality At Ifrsud Ibu Fatmawati Soekarno Surakarta

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Abstract. Service quality is the company's ability to meet customer expectations. In the Pharmaceutical Installation of Ibu Fatmawati Soekarno Hospital Surakarta, service quality improvement is carried out using SWOT based strategy. This study assessed patient satisfaction and employee job satisfaction using Servqual and job satisfaction questionnaires. This study used a descriptive cross sectional method involving patients who redeemed drugs at least three times and all staff in the pharmacy installation. Servqual analysis showed positive satisfaction in three dimensions (Responsiveness, Assurance, and Empathy) but an overall GAP of -0.14 indicating some dissatisfaction. Similarly, job satisfaction had a GAP of -0.16, indicating dissatisfaction. The SWOT analysis showed positive results with an IFAS score of 0.80 and an EFAS score of 1.10, placing the hospital in quadrant I, the most favorable position to develop strategies to improve service quality and job satisfaction by maximizing its strengths and opportunities.

Keywords: Improvement strategy, SWOT Analysis, Service Quality, Job Satisfaction, IFRSUD Ibu Fatmawati Soekarno Surakarta

Performance Analysis of the Pharmacy Installation of Dr Harjono Ponorogo Regional General Hospital in 2023 Based on the *Balanced Scorecard* Method

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Abstract. RSUD Dr. Harjono Ponorogo its performance measurement has only focused on financial aspects. Therefore, a more comprehensive approach is needed using the Balanced Scorecard method which includes four main perspectives, namely financial perspectives, internal business processes, customers, growth and learning. **Methods:** This study designed non-experimental case study was descriptive. Data collected in the form of quantitative data and qualitative. The sampling technique used was purposive sampling. Criteria used for the respondent customers are all Hospital Pharmacy Installation employees and repeat visit outpatients. **Results:** The results showed on Financial perspective suggests that ITOR in 2022 was 12,90 and 2023 was 10,91, GPM in 2022 was 19,69% and 2023 was 19,68%, GROS in 2022 was growth 1,25% and 2023 was growth 1,52%. Internal Business Processes perspective suggests that was availability of drugs according to standards However, the value of dead stock drugs at 4.86% and expired drugs at 1.96% is still above the standard value of more than 1%. The results showed on Customers on five dimensions still obtained negative result an average GAP of -0.54 his shows that the IFRS RSUD Dr Harjono provides unsatisfactory service quality for patients. **Conclusion:** Financial perspective, internal business processes, growth and learning in the good category and according to standards except for the dead stock and Expired Date values still above the standard. In the customer perspective, they are still dissatisfied with the service, so the pharmaceutical installation requires an improvement strategy.

Keywords: Performance; Performance Analysis; IFRS Dr Harjono; *Balanced Scorecard*