# Bioinformatics Analysis to Identify Therapeutic Targets of *Artocarpus altilis* Compounds in Breast Cancer Therapy

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**Abstract.** Breast cancer is an adenocarcinoma characterized by high genetic and clinical heterogeneity, making it the most commonly diagnosed cancer worldwide, with 2.3 million new cases and 685,000 deaths in 2020. Treatment includes surgery, radiation, chemotherapy, endocrine therapy, and targeted therapy, which often come with significant side effects. Artocarpus altilis, a plant rich in flavonoids and other bioactive compounds, has long been used in traditional medicine and shows promise as an anticancer agent. This study aims to identify potential therapeutic targets of *Artocarpus altilis* for breast cancer treatment through bioinformatics analysis. Using a network pharmacology approach, the research involves drug-likeness screening, protein target prediction, protein-protein interaction analysis with StringDB, and pathway visualization via KEGG. Gene Ontology analysis was also conducted to assess molecular activity. Screening of *Artocarpus altilis* compounds for drug-likeness and bioavailability revealed three compounds with poor results based on Lipinski's rule. Protein target identification highlighted 15 key proteins, with EGFR and IGF1R as primary targets. KEGG pathway analysis identified significant pathways related to cancer progression, including "*Progesterone-mediated oocyte maturation*" and "*EGFR tyrosine kinase inhibitor resistance". Breast cancer inhibition with EGFR and IGF1R involves inhibition of signaling pathways that support cancer cell proliferation, invasion, and metastasis. EGFR activates the PI3K, MAPK, and JAK/STAT pathways that play a role in tumor migration, while IGF1R influences cancer progression through cell proliferation and lymphatic vessel formation.* The findings suggest that EGFR and IGF1R play crucial roles in the anticancer activity of Artocarpus altilis, offering potential therapeutic targets for breast cancer.

## 1 Introduction

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Breast cancer is a disease characterized by significant genetic and clinical heterogeneity, with the majority of cases being adenocarcinomas [1] It is the most commonly diagnosed cancer worldwide, with 2.3 million new cases and 685,000 deaths in 2020 [2]. Most cases of breast cancer are sporadic, but certain genetic mutations such as BRCA1 and BRCA2 are known to increase the risk of developing this cancer, which is inherited in an autosomal dominant manner [3]. Most breast cancer patients do not exhibit clear symptoms, and the condition is usually detected during routine breast exams or through mammography. Treatment for breast cancer involves various approaches, including surgery, radiation therapy, chemotherapy, endocrine therapy, and targeted therapy [4]. Although effective, these treatments often come with significant side effects such as hair loss, fatigue, increased susceptibility to infections, heart dysfunction, febrile neutropenia, and leukopenia [5].

Artocarpus altilis, a plant from the Moraceae family, has long been used in traditional medicine and as an alternative food source in Indonesia [6]. Borneo Island is known as the center of diversity for the genus Artocarpus, which can also be found in Mainland Asia, Sumatra, and Java [7]. *Artocarpus altilis* has been empirically used for treating diabetes, due to its compounds that inhibit the enzyme α-glucosidase [8]. Extracts from this plant have also been shown to to inhibit the growth of various microorganisms effectively [9]. The leaves of *Artocarpus altilis* contain several compounds, including flavonoids, known for their potential to inhibit cancer cell growth. The fruit of *Artocarpus altilis* contains triterpenes, flavonoids, stilbenes, arylbenzofurans, and sterols, which have antioxidant, antimicrobial, anticancer, and antidiabetic activities [10]. Several flavonoid derivatives from A. altilis have also shown potential in inhibiting estrogen receptor alpha (ERα), making them potential candidates for breast cancer treatment [11]. Pharmacological research by Jones in 2011 demonstrated that flavonoids in *Artocarpus altilis* possess anti-inflammatory activities and can inhibit various enzymes, such as 5-lipoxygenase, cathepsin K, and 5α-reductase, which could play a role as anticancer agents [12].

Bioinformatics approaches through network pharmacology is an emerging method that aims to map drug mechanisms and their interactions with various molecular targets [13]. This method uses computational technology to identify molecular interactions in drug combinations or herbal formulas and reveal their effects in living cells. Network pharmacology allows for extensive exploration of knowledge related to traditional medicine, new drug discovery, rational drug formulation, and drug repurposing [14]. This approach was chosen in this study due to its ability to offer innovative solutions to emerging pharmacological challenges. This research aims to identify potential therapeutic targets of *Artocarpus altilis* in the context of its anticancer activity against breast cancer.

## 2 Material and Methods

This study employs an experimental approach using an In-Silico method based on network pharmacology. The analysis process in this study relies on bioinformatics and computational techniques. The hardware used includes an Acer laptop with an AMD

Radeon™ R3, 8GB DDR4 RAM, and a 256GB SSD storage. The software utilized includes Cytoscape version 3.10.2 and Cytohubba.

The preparation process begins with the selection of active compounds listed in Table 1, obtained from the PubChem database to retrieve Canonical SMILES. The first step in compound screening is the assessment of Drug-Likeness, which is conducted through Boiled-Egg visualization to determine the feasibility of the active compounds within the body. Compounds that meet the Drug-Likeness criteria are then analyzed to predict their targets using the SuperPred website with a 50% confidence level [15]. Additionally, breast cancer-associated encoding proteins are searched through the GeneCards website with a confidence level above 1. The intersection analysis between active compound targets and cancer-related encoding proteins is carried out using the Venny 2.1 website. This intersection generates specific proteins, which are then further analyzed using the StringDB website, selecting the species "Homo sapiens." This process will yield protein-protein interaction (PPI) data, illustrating the network interactions between those specific proteins.

The PPI results will reveal pathways related to the specific proteins. Adjustment of these pathways to the context of breast cancer is conducted using the KEGG Pathway to determine proteins relevant to disease progression. A circular network pharmacology visualization is created to depict the relationships between the plant, active compounds, target proteins, and KEGG pathways, built using Cytoscape 3.10.2 software. Proteins involved in the relevant pathways are then further analyzed to assess their molecular activities. This analysis is carried out using Gene Ontology (GO) and KEGG with the assistance of the Webgestalk website. The GO analysis provides information on molecular functions, cellular components, and biological processes associated with each protein resulting from the intersection of protein targets and the disease [16]. Meanwhile, the KEGG pathway analysis is used to confirm the impact of target proteins on the breast cancer pathway. Finally, the ten proteins with the largest interactions are identified through StringDB analysis, processed using Cytohubba software.

**Table 1.** The active compounds of Artocarpus altilis

| Mol | Active Compounds | Mol | Active Compounds |
|---|---|---|---|
| Mol 1 | Caffeic acid | Mol 8 | Ellagic acid |
| Mol 2 | Chlorogenic acid | Mol 9 | Gallic acid |
| Mol 3 | Coumaric acid | Mol 10 | Catechin |
| Mol 4 | Ferulic acid | Mol 11 | Epicatechin |
| Mol 5 | Hyperoside | Mol 12 | Limonene |
| Mol 6 | Quercetin | Mol 13 | Γ-terpinene |
| Mol 7 | Vescalagin | Mol 14 | Terpinolene |

## 3 Results and Discussion

The active compounds of *Artocarpus altilis* were first identified by searching for their chemical structures using PubChem, which yielded several molecules with corresponding codes listed in Table 1. These compounds were then tested for drug-

likeness and bioavailability. The results showed that three molecules, namely molecule 2, molecule 5, and molecule 7, did not meet Lipinski's criteria for drug-likeness, indicating that these compounds have poor bioavailability potential. Lipinski's Rule of Five is a guideline used to assess the feasibility of a compound as a drug based on four key parameters: molecular weight, lipophilicity, the number of hydrogen bond donors and acceptors, and polarity. Molecules that do not meet Lipinski's criteria are at risk of having low solubility and permeability, which in turn may affect the drug's effectiveness in the human body [17].

The bioavailability visualization using the Boiled-Egg method revealed that molecule 2 was outside the circle, indicating poor bioavailability. Moreover, molecules 5 and 7 could not be visualized in this model, further suggesting extremely poor bioavailability for these two molecules. This is crucial because compounds that cannot be effectively absorbed in the body will struggle to reach therapeutic targets at the desired location [15], [18].

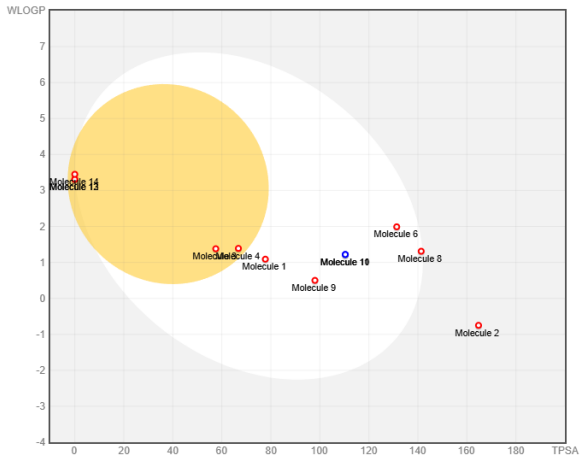


**Fig. 1**. Boiled-egg analysis of *Artocarpus altilis* compounds

The target proteins of the active compounds from *Artocarpus altilis* resulted in 93 proteins matching the criteria set in this study. Using the GeneCards database to analyze breast cancer-related encoding proteins, 17,622 proteins were found, of which 15,386 were identified as directly related to breast cancer. After performing an intersection between the compounds' targets and the breast cancer-related proteins, 89 relevant proteins were found, as shown in Figure 2. This data indicates the significant potential of *Artocarpus altilis* active compounds in affecting various biological pathways related to breast cancer.

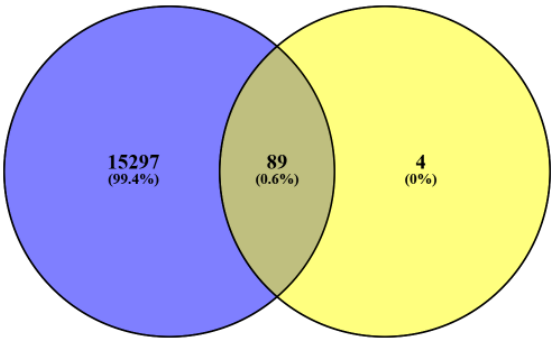


**Fig. 2.** Intersection of breast cancer-encoding protein targets and *Artocarpus altilis*

After identifying relevant protein targets, further analysis was performed using StringDB, resulting in a protein-protein interaction network. Figure 3 illustrates the network with 89 nodes and 283 edges, with an average coefficient value >0.3. This indicates strong interactions between the target proteins, potentially offering deeper insights into the biological mechanisms involved in breast cancer. Additionally, this protein interaction network revealed three pathways highly relevant to breast cancer progression: "MAPK Signaling Pathway," "Cell Cycle," and "PI3K-Akt Signaling Pathway." These pathways are well-known for their roles in processes leading to the development and spread of breast cancer cells. The MAPK Signaling Pathway regulates cellular changes that may cause breast cancer progression [19]. The Cell Cycle process controls cell division, and if disrupted, it can lead to uncontrolled cell proliferation, a hallmark of cancer [20]. The PI3K-Akt Signaling Pathway regulates various cellular processes, including cell proliferation and inhibition of apoptosis, which are crucial for the formation of cancer cells, especially in breast cancer [21].

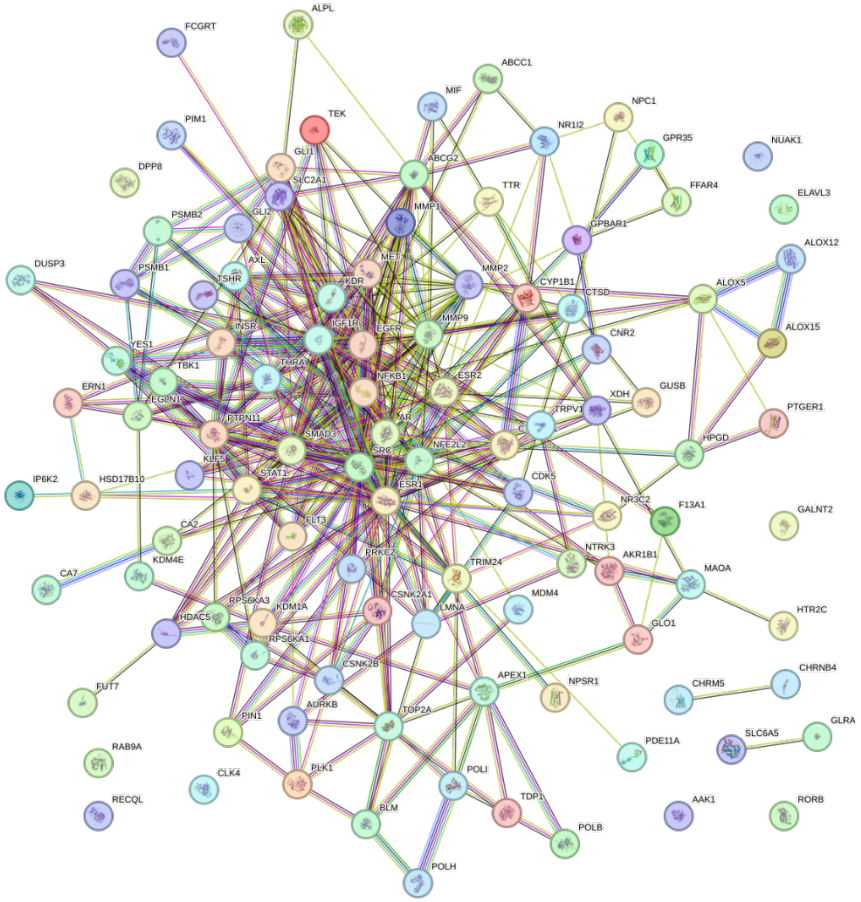


**Fig. 3.** Protein-protein interaction network of *Artocarpus altilis* target proteins

The pathway adjustment process resulted in a pharmacological network visualization that shows the relationship between the active compounds of *Artocarpus altilis* and breast cancer. Figure 4 clearly illustrates this visualization. In this visualization, *Artocarpus altilis* as the botanical or test plant is represented in dark green and a circular shape. The active compounds of Artocarpus altilis, which act as breast cancer-promoting agents, are shown in light green and square shape. Target proteins associated with breast cancer are represented as red hexagons. Additionally, orange triangles represent core proteins involved in lung cancer activity and are considered potential targets for further research. This study identified three pathways that align with the target proteins of Artocarpus altilis.

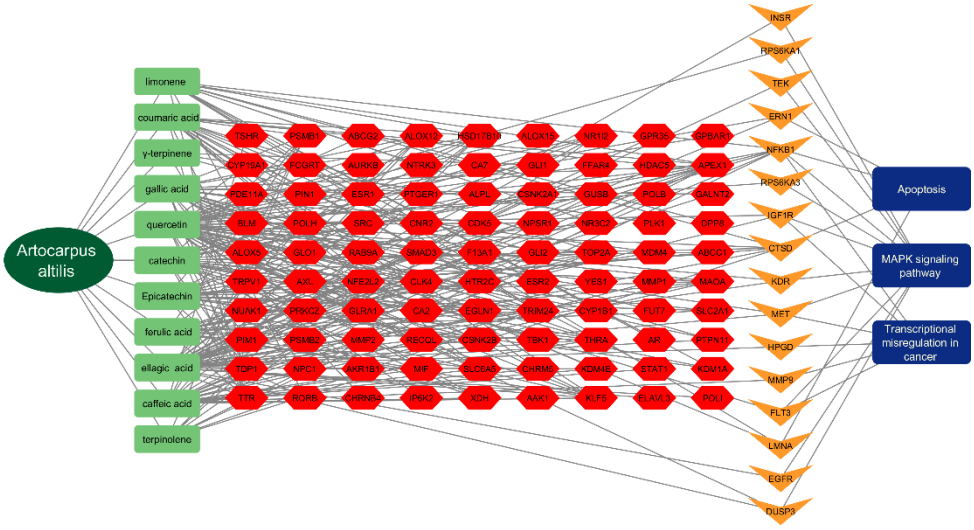


**Fig. 4.** Network pharmacology visualization of *Artocarpus altilis* as a breast cancer anticancer agent

Gene Ontology (GO) is a tool used to categorize protein functions in various aspects, such as biological processes, cellular components, and molecular functions [22]. In this study, GO analysis revealed that all proteins involved in interactions with the active compounds of *Artocarpus altilis* participate in three major processes, as shown in Figure 5. Biological processes focus on activities related to cellular regulation and responses to external stimuli. Cellular components show that dominant proteins function in the "membrane," "membrane-enclosed lumen," and "protein-containing complex," which are associated with membrane permeability control and protein interactions within the cell. Molecular function provides information that the primary function of these proteins is "protein binding," with additional functions such as "ion binding," "nucleotide binding," and "transferase activity".

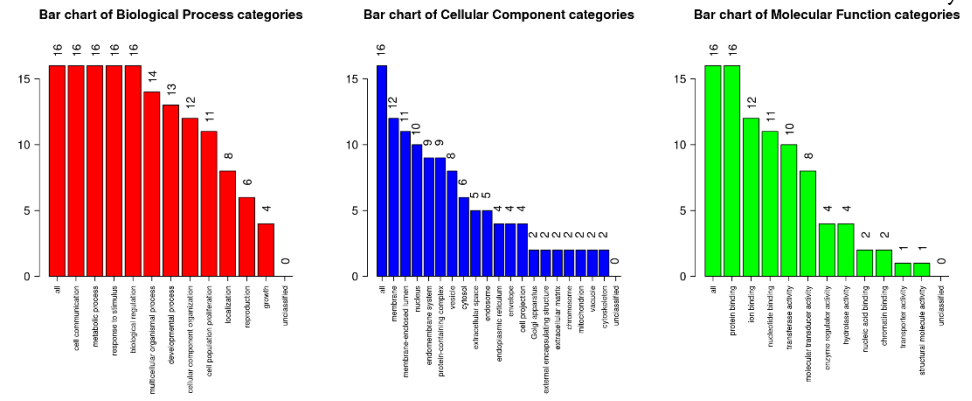


**Fig. 5.** Gene ontology analysis

Pathway enrichment analysis using the Kyoto Encyclopedia of Genes and Genomes (KEGG) revealed dominant pathways associated with breast cancer, as shown in Figure 6. The "Progesterone-mediated oocyte maturation" pathway had the highest enrichment value (32.549), indicating a strong link between progesterone and breast cancer cell regulation [23]. The "Adherens junction" (29.749) and "EGFR tyrosine kinase inhibitor resistance" (25.382) pathways also showed high enrichment values, suggesting their significant roles in regulating cancer cell proliferation and resistance to breast cancer treatment. This was followed by the “HIF-1 signaling pathway” and “MAPK signaling pathway,” with enrichment values of 22.060.

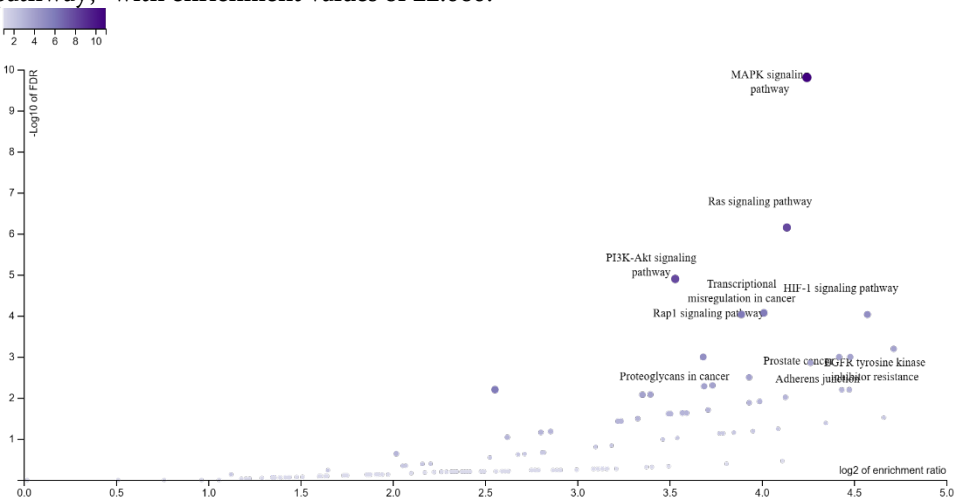


**Fig. 6**. KEGG Pathway Analysis

Further adjustment revealed 15 relevant proteins associated with the pathways. To understand the impact of protein-protein interactions, an interaction value analysis was performed. The analysis found that the Epidermal Growth Factor Receptor (EGFR) had the highest interaction value with a score of 10. Other proteins with high interaction values included the Insulin-like Growth Factor 1 Receptor (IGF1R) with a score of 7. Additionally, five other proteins had the same interaction score of 6.

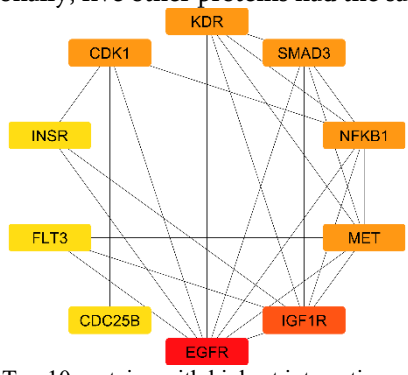


Fig. 7. Top 10 proteins with highest interactions

The Epidermal Growth Factor Receptor (EGFR) family in humans consists of four transmembrane receptors with two main domains: the extracellular ligand-binding

domain and the intracellular tyrosine kinase domain. Tyrosine kinase activation leads to the activation of several cellular signaling pathways, such as the PI3K, Ras-Raf-MAPK, JNK, and PLCγ pathways, which may contribute to the increased metastasis potential in breast cancer. EGFR activity is also associated with interactions with HER2 and has an inverse correlation with estrogen receptors, which affects the response to hormone therapy in breast cancer [24]. Furthermore, EGFR promotes epithelial-mesenchymal transition in epithelial cells, a crucial process in tumor migration and invasion. EGFR-related signaling pathways, such as the MET pathway involving c-Met phosphorylation by HGF, activate PI3K, JAK/STAT, and MAPK, which play roles in cell morphogenesis, mitogenesis, and mammary gland development in breast cancer cases [25].

In cases of resistance to EGFR-TKI therapy in breast cancer, conformational changes in the receptor kinase molecule due to secondary mutations may affect other signaling pathways and lead to phenotypic transformations in cancer cells [26]. Inhibiting EGFR-TKI is expected to re-regulate the ABCG2 pathway, angiogenesis, cell proliferation, metastasis, and apoptosis inhibition. Despite EGFR inhibition, the overexpression related to cancer cell survival may still maintain proliferative signals and survival of resistant cancer cells [27]. The Hypoxia-inducible Factor 1 (HIF-1) transcription factor plays a key role in cellular adaptation to hypoxic conditions, especially in necrotic areas surrounding tumor cores. In breast tumors, HIF-1α is overexpressed in precursor lesions and correlates with high tumor invasion rates. Hypoxia can increase HIF-1α expression, which in turn modulates the expression of many genes affecting tumor growth, metastasis, and drug resistance, enabling cancer cells to survive in detrimental hypoxic conditions [28].

The Insulin-like Growth Factor 1 (IGF-1) protein stimulates cell growth and is released into the bloodstream under the influence of growth hormones. IGF-1 then binds to the IGF-1R receptor, activating the IGF-1 signaling pathway to support breast cancer growth. This is achieved by promoting cancer cell proliferation, inhibiting cell apoptosis, and enhancing VEGF-C production, a key factor in lymphatic vessel formation and breast cancer metastasis via the lymphatic system [29]. IGF-1R in breast cancer plays a vital role in regulating cancer stem cells and epithelial-mesenchymal transition, which in turn impacts cancer progression, metastasis, and angiogenesis [30].

The findings of this study present a promising avenue for the development of alternative breast cancer treatments using *Artocarpus altilis* compounds. While some of the compounds showed limitations in drug-likeness and bioavailability, the identification of key target proteins such as EGFR and IGF1R and their involvement in critical cancer pathways suggests that these compounds hold significant therapeutic potential. Furthermore, the study highlights the possibility of combining *Artocarpus altilis* with existing therapies to target drug resistance in breast cancer, potentially enhancing the effectiveness of current treatments. This research lays the foundation for further investigation into the potential of *Artocarpus altilis* as a complementary or alternative treatment for breast cancer, offering new hope for more effective and personalized therapeutic strategies.

# 4 Conclusion

The active compounds of *Artocarpus altilis* that were tested for drug similarity and bioavailability showed three compounds with poor results according to Lipinski's rule. Through bioavailability analysis and protein interactions, it was found that these compounds interact with 89 proteins related to breast cancer. Target proteins were identified and their interactions were analyzed using StringDB, revealing 15 key proteins with EGFR and IGF1R as primary targets. Gene ontology analysis indicated the involvement of these proteins in membrane activity and protein binding. The therapeutic potential includes inhibiting this pathway to reduce proliferation and enhance apoptosis in cancer cells. Resistance to EGFR-TKI in breast cancer suggests the need for more complex treatment strategies to address secondary mutations and the activation of other signaling pathways.

Future research is recommended to conduct in vitro and in vivo tests to verify their anticancer effectiveness. Further studies are needed to understand the mechanisms of resistance to EGFR-TKI and to explore more effective combination therapies. Additional research into signaling pathways such as MAPK and PI3K-Akt could identify other potential therapeutic targets.

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**Data Availability Statement**
Data can be provided upon request.

**Declaration of Competing Interests**
The authors declare no conflicts of interest.

**Author Contribution Statement**
All authors were involved in the conceptualization, analysis, writing, and revision of the manuscript.

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# Ahmad Dahlan International Conference on Health Sciences (ADICOHS)

One Health: an Integrated Approach to Sustainably Balance and Optimize the Health of People, Animals and Ecosystems

# PROGRAM BOOK

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**Foreword from the Organizing Committee Chair**

It is my great pleasure to welcome you to the 1st Ahmad Dahlan International Conference on Health Sciences (ADICOHS) 2025. Organized by the Faculty of Pharmacy, Medicine, and Public Health at Universitas Ahmad Dahlan, and co-hosted by other honourable instituions. This inaugural event represents a pivotal step in advancing health sciences through interdisciplinary collaboration.

This year's theme, "One Health: Addressing Challenges in Medicine, Pharmacy, and Public Health," highlights the vital connections between human, animal, and environmental health. In an era of complex global health challenges, the "One Health" approach provides a holistic framework for sustainable solutions.

ADICOHS 2025 offers a dynamic platform for scholars, researchers, practitioners, and policymakers to share cutting-edge research, discuss pressing issues, and foster meaningful dialogue. Key topics include infectious diseases, zoonotic threats, and sustainable public health practices, natural product, drug discovery and bioinformatic reflecting the diverse challenges we face today.

We are honored to host renowned keynote speakers and experts whose insights will inspire innovative solutions. Interactive sessions, workshops, and networking opportunities will further encourage collaboration and knowledge exchange.

I extend my deepest gratitude to the organizing committee, volunteers, partners, and sponsors whose dedication made this event possible. Your support underscores the importance of cross-sector partnerships in advancing global health.

As we begin this conference, I urge all participants to engage actively, share ideas, and build lasting connections. Together, we can drive meaningful progress in health sciences.

May ADICOHS 2025 not only be a forum for learning but also a catalyst for action, paving the way for a healthier, more equitable world.

Thank you, and let's make this conference a success!

Warm regards,

**Prof. Dr. apt. Nurkhasanah M., M.Si.**
Chair, Organizing Committee
ADICOHS 2025

**Distinguished Speakers of ADICOHS 2025: Advancing One Health Through Global Insights**

The 1st Ahmad Dahlan International Conference on Health Sciences (ADICOHS) 2025 proudly presents an engaging lineup of distinguished speakers who will share their expertise in alignment with this year's theme, *"One Health: an Integrated Approach to Sustainably Balance and Optimize the Health of People, Animals and Ecosystems."*
The conference begins with two insightful keynote speeches in the plenary session:

1. **Prof. Takashi Yashiro, MD, Ph.D.** (Jichi Medical University, Japan)
   *Topic: "Current Research Methods of Anterior Pituitary Cells in the Field of Medical Biology / Histology".* This presentation explores modern histological techniques in understanding anterior pituitary cell mechanisms and their significance in medical biology.
2. **Assoc. Prof. Ilker Ates** (Ankara University, Turkey)
   *Topic: "Use of Biomarkers in Deciphering Human Health Impacts of Environmental Contaminants".* This session focuses on how biomarkers can be effectively used to evaluate and monitor the effects of environmental pollutants on human health.

Following the plenary session, the conference continues with **two rounds of parallel sessions** in **four breakout rooms**, featuring a total of **eight invited speakers**, each leading a thematic track followed by selected oral presentations.
**Parallel Session 1 (12.30 – 14.05 WIB):**

- **Room I**
  **Usasiri Srisakul, RPh, MS, PharmD, BCP** (Siam University, Thailand)
  *Topic: "Anti-hypertensive Medications in the Aging Society".* A session addressing challenges and strategies in prescribing antihypertensives for aging populations.
- **Room II**
  **Dr. Fardiasih Dwi Astuti, S.K.M., M.Sc.** (Universitas Ahmad Dahlan, Indonesia)
  *Topic: "Laboratory-Based Dengue Surveillance for Prompt Response to Dengue Hemorrhagic Fever Prevention".* This talk highlights the vital role of lab surveillance systems in early detection and intervention in dengue outbreaks.
- **Room III**
  **Dr. Nur Azma Amin** (Universiti Kuala Lumpur, Malaysia)
  *Topic: "Psychosocial Factors Among Workers: Reality and Challenges".* A discussion on occupational mental health, focusing on psychosocial risks in the workplace.
- **Room IV**
  **dr. Yanantri Binga Ramsif, M.Med.Sc, Sp.A** (Universitas Ahmad Dahlan, Indonesia)
  *Topic: "Preventing and Controlling Essential Micronutrient Deficiencies in*

*Infants and Young Children".* This presentation examines nutritional interventions aimed at combating micronutrient deficiencies in pediatric populations.

**Parallel Session 2 (14.15 – 15.50 WIB):**

- **Room I**
  **Punyawee Puchsaka, M.Sc in Pharm., BCCP** (Siam University, Thailand)
  *Topic: "Oral Anticoagulants: Key Considerations for Safe and Effective Therapy".* A critical overview of clinical considerations in the use of oral anticoagulants for various therapeutic indications.
- **Room II**
  **Assist. Prof. Ongun Mehmet Saka** (Ankara University, Turkey)
  *Topic: "Personalized Health Through Gene Therapy: Challenges and Opportunities".* This session explores the frontier of gene therapy and its potential to revolutionize personalized healthcare.
- **Room III**
  **Wang Zijie, Ph.D.** (The Second Affiliated Hospital of Nanjing Medical University, China)
  *Topic: "Iguratimod Ameliorates Antibody-Mediated Rejection After Renal Transplant".* A scientific discussion on therapeutic advances in managing renal transplant rejection.
- **Room IV**
  **Dr. apt. Adnan, M.Sc.** (Universitas Ahmad Dahlan, Indonesia)
  *Topic: "Bioinformatics-Based Drug Repurposing in Systemic Lupus Erythematosus: An Innovative Solution to a Pharmaceutical Challenge".* This presentation introduces the application of bioinformatics in identifying alternative treatments for complex autoimmune diseases.

These carefully curated sessions are designed to foster academic exchange, promote interdisciplinary research, and stimulate collaborative innovation across the fields of medicine, pharmacy, and public health.

**Program Schedule**

**1st Ahmad Dahlan International Conference on Health Sciences (ADICOHS): "One Health: an Integrated Approach to Sustainably Balance and Optimize the Health of People, Animals and Ecosystems"**

May, 20th 2025
Hybrid, Online zoom meeting, Campus 3 UAD.

**Time is written in Western Indonesian Time**

- **Malaysia Time (± 1 hour)**
- **Japan Time (± 2 hours)**
- **Thailand Time (± 0 hour)**
- **China Time (± 1 hour)**
- **Turkey Time (± 4 hours)**

| ROOM | TIME | SCHEDULE |
|---|---|---|
| Plennary Session Main Room | 07.30-08.10 | Registration<br>Video Profile playback |
| | 08.10-08.30 | Opening Ceremony<br>● Dean Speech<br>● Chairman Speech |
| | 08.30-09.15<br><br><br><br><br>09.15-09.30 | Keynote Speaker 1,<br>Prof. Takashi Yashiro, MD, Ph.D, (Jichi Medical University, Japan)<br>Topic: Current Research Methods of Anterior Pituitary Cells in the field of Medical Biology / Histology<br><br>Discussion |
| | 09.30-10.15<br><br><br><br>10.15-10.30 | Keynote Speaker 2,<br>Assoc. Prof. Ilker Ates (Ankara University, Turkey)<br>Topic: Use of biomarkers in deciphering human health impacts of environmental contaminants<br><br>Discussion |
| | 10.30-11.30 | Poster Session<br>PO-01 Nurul Suwartiningsih<br>PO-02 Haris Setiawan<br>PO-03 Oktira Roka Aji<br>PO-04 Endah Sulistiawati |

| | | |
|---|---|---|
| | | PO-05 Sapto Yuliani<br>PO-06 Wahyu Widyaningsih<br>PO-07 Akrom Akrom<br>PO-08 Nina Salamah<br>PO-09 Amanatus Sholihah |
| | 11.30-12.30 | Lunch Break<br>The participants join the parallel session breakout room. |
| Parallel Session 1 Breakout Room | 12.30-12.50 | Room I: Speaker 1.<br>Usasiri Srisakul, RPh, MS, PharmD, BCP., Siam University, Thailand<br>Topic: “Anti-hypertensive Medications in the Aging Society” |
| | 12.50-14.05 | Room I: Oral Presentation - Pharmacology<br>OR-01 Taslima Belgum<br>OR-02 Adnan<br>OR-03 Prita Anggraini Kartika Sari<br>OR-04 Leonny Dwi Rizkita<br>OR-05 Lolita |
| | 12.30-12.50 | Room II: Speaker 2.<br>Dr. Fardiasih Dwi Astuti, S.K.M., M.Sc. (Universitas Ahmad Dahlan, Indonesia)<br>Topic: Laboratory-based dengue surveillance for prompt response to dengue hemorrhagic fever prevention |
| | 12.50-14.05 | Room II: Oral Presentation - Health Management<br>OR-06 Aysu Selcuk<br>OR-07 Tira Alfiani Laariya<br>OR-08 Wijianto<br>OR-09 Tri Pitara M.<br>OR-10 Senya Puteri Amalia |
| | 12.30-12.50 | Room III: Speaker 3.<br>Dr. Nur Azma Amin (Universiti Kuala Lumpur, Malaysia)<br>Topic: Psychosocial Factors Among Workers: Reality and Challenges |
| | 12.50-14.05 | Room III: Oral Presentation - Health Promotion<br>OR-11 Titiek Hidayati<br>OR-12 Annisa Annisa<br>OR-13 Heni Trisnowati<br>OR-14 Rifkinda Zakiarahman<br>OR-15 Ginanjar Zukhruf Saputri |

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|---|---|---|
| | 12.30-12.50 | Room IV: Speaker 4.<br>dr. Yanantri Binga Ramsif, M.Med.Sc, Sp.A (Universitas Ahmad Dahlan, Indonesia)<br>Topic: Preventing and Controlling Essential Micronutrient Deficiencies in Infants and Young Children. |
| | 12.50-14.05 | Room IV: Oral Presentation - Food and Nutrition<br>OR-16 Hari Susanti<br>OR-17 Nurkhasanah Mahfudh<br>OR-18 Sri Mulyaningsih<br>OR-19 Trianik Widyaningrum<br>OR-20 Syarifatul Mufidah |
| | 14.05-14.15 | Evening coffee Break |
| Parallel Session 2 Breakout Room | 14.15-14.35 | Room I: Speaker 5.<br>Punyawee Puchsaka, M.Sc in Pharm., BCCP (Siam University, Thailand)<br>Topic: “Oral Anticoagulants: Key Considerations for Safe and Effective Therapy” |
| | 14.35-15.50 | Room I: Oral Presentation - Drug Formulation<br>OR-21 Nining Sugihartini<br>OR-22 Aziz Ikhsanudin<br>OR-23 Annas Binarjo<br>OR-24 Putri Rachma Novitasari<br>OR-25 Iis Wahyuningsih |
| | 14.15-14.35 | Room II: Speaker 6.<br>Assist. Prof. Ongun Mehmet Saka (Ankara Univeristy, Turkey)<br>Topic: Personalized health through gene therapy: challenges and opportunities |
| | 14.35-15.50 | Room II: Oral Presentation - Herbal Medication<br>OR-26 Andhika Nor Hendryawan<br>OR-27 Kintoko<br>OR-28 Irfan Yunianto<br>OR-29 Novi Febrianti<br>OR-30 Hardi Astuti Witasari |
| | 14.15-14.35 | Room III: Speaker 7.<br>Wang Zijie, Ph.D (The Second Affiliated Hospital of Nanjing Medical University, China)<br>Topic: “Iguratimod ameliorates antibody-mediated rejection after renal transplant” |
| | 14.35-15.50 | Room III: Oral Presentation - Clinical Therapy<br>OR-31 Rini Widarti<br>OR-32 Susan Fitri C. |

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|---|---|---|
| | | OR-33 Nuni Ihsana<br>OR-34 M. Hafizh Abiyyu Fathin Fawwazi<br>OR-35 Andriana Sari |
| | 14.15-14.35<br><br><br><br><br><br>14.35-15.50 | Room IV: Speaker 8.<br>Dr. apt. Adnan, M.Sc. (Universitas Ahmad Dahlan, Indonesia)<br>Topic: Bioinformatics-Based Drug Repurposing in Systemic Lupus Erythematosus: An Innovative Solution to a Pharmaceutical Challenge<br><br>Room IV: Oral Presentation - Drug Discovery<br>OR-36 Aysenur Bezelya<br>OR-37 Fitria Puspita Dewi<br>OR-38 Dwi Utami<br>OR-39 Anggoro Wicaksono<br>OR-40 Yudha Rizky Nuari |
| Main Room | 15.50-16.00<br><br>16.00-16.30 | Closing Ceremony (Video Profile playback)<br><br>Announcement:<br>Best Oral Presenter<br>Best Poster Presenter |

**POSTER Presentation Schedule**

**Time 10.30-11.30**

**10.30 – 10.35 PO-01** THE EFFECT OF POLYSTYRENE MICROPLASTIC EXPOSURE IN THE REARING WATER ON MUSCLE HISTOMORPHOMETRY OF MUTIARA CATFISH (*Clarias gariepinus* Burchell, 1822)

**10.35 – 10.40 PO-02** PROTECTIVE EFFECTS OF RED SPINACH (*Amaranthus Tricolor* L.) ETHANOLIC EXTRACT ON TRACHEAL HISTOPATHOLOGY IN CIGARETTE SMOKE-EXPOSED WISTAR RATS

**10.40 – 10.45 PO-03** ANTIMICROBIAL AND ANTIOXIDANT POTENTIAL OF *Penicillium* sp. ENDOPHYTIC FUNGI ISOLATED FROM BANANA PLANTS

**10.45 – 10.50 PO-04** REDUCING OXALATE LEVELS IN COCOYAM (XANTHOSOMA SAGITTIFOLIUM) PETIOLES USING CITRIC ACID SOLUTION TO PRODUCE FOOD-GRADE FLUOR

**10.50 – 10.55 PO-05** SNEDDS CURCUMIN IMPROVES SPATIAL MEMORY AND ACETYLCHOLINESTERASE ACTIVITY IN A DEMENTIA MODEL RAT

**10.55 – 11.00 PO-06** EFFECT OF AVOCADO LEAF ETHANOL EXTRACT GEL (*Persea Americana* Mill) ON HEALING DIABETIC WOUNDS

**11.00 – 11.05 PO-07** INHIBITION OF INFLAMMATION BY NANOEMULSION CONTAINING BLACK CUMIN SEED OIL AND TEMULAWAK EXTRACT IN DIABETES MELLITUS PATIENTS: A STUDY ON PERIPHERAL BLOOD MONOCYTES

**11.05 – 11.10 PO-08** HALAL EMULGEL PREPARATIONS FROM ESSENTIAL OIL OF KAFFIR ORANGE PEEL (*Citrus hystrix*) AS ANTIACNE

**11.10 – 11.15 PO-09** HOW DOES PERIPHERAL VENOUS CATHETER-RELATED ADVERSE EVENTS IMPACT THE LENGTH OF STAY FOR A PATIENT: EVALUATE THE INFLUENCE OF RISK FACTORS ON RATES?

**ORAL Presentation Schedule**

**Parallel Session 1 Breakout Room Time 12.30-14.05**

## Room 1

**12.30 – 12.50 Speaker 1.** Usasiri Srisakul, RPh, MS, PharmD, BCP., Siam University, Thailand Topic: "Anti-hypertensive Medications in the Aging Society" Pharmacology

**12.50 – 13.05 OR-01** TOXICITY ASSESSMENT OF *Mitragyna speciosa* LEAF EXTRACT USING ZEBRAFISH (*Danio rerio*) EMBRYOS

**13.05 – 13.20 OR-02** IDENTIFICATION OF GENETIC VARIATIONS AS RISK FACTORS FOR LEPROSY DISEASE THAT ARE TARGET FOR DRUG

**13.20 – 13.35 OR-03** PRELIMINARY STUDY ON THE ANTIHYPERGLYCEMIC EFFECT OF NEEM LEAF EXTRACT SUSPENSION IN ALLOXAN-INDUCED DIABETIC RATS

**13.35 – 13.50 OR-04** *CURCUMA CAESIA ROXB*. AS A POTENTIAL ALTERNATIVE THERAPY FOR DIABETIC NEPHROPATHY: A NETWORK PHARMACOLOGY ANALYSIS

**13.50 – 14.05 OR-05** ASSESSING RISK PERCEPTION ASSOCIATED WITH UNKNOWN ACUTE HEPATITIS AMONG PARENTS AND EDUCATORS IN EARLY CHILDHOOD EDUCATION SETTINGS

## Room 2

**12.30 – 12.50 Speaker 2**. Dr. Fardiasih Dwi Astuti, S.K.M., M.Sc. (Universitas Ahmad Dahlan, Indonesia) Topic: Laboratory-based dengue surveillance for prompt response to dengue hemorrhagic fever prevention Management

**12.50 – 13.05 OR-06** MEDICATION COMPLEXITY IN OLDER ADULTS AT THE GERIATRICS UNIT

**13.05 – 13.20 OR-07** IMPACT OF EDUCATION LEVEL ON WAIST CIRCUMFERENCE AMONG UNIVERSITY WORKERS

**13.20 – 13.35 OR-08** THE EFFECT OF SQUARE STEPPING EXERCISE ON WALKING SPEED OF ELDERLY

**13.35 – 13.50 OR-09** ASSOCIATION OF DEMOGRAPHIC CHARACTERISTICS, COMORBID DISEASES, AND TYPE OF STROKE WITH THE INCIDENCE OF MORTALITY IN STROKE PATIENTS: A REVIEW LITERATURE

**13.50 – 14.05 OR-10** THE SHADOW SIDE OF CORTICOSTEROIDS: PHARMACOVIGILANCE REVIEW OF ADVERSE DRUG REACTIONS IN INDONESIAN PATIENTS

## Room 3

**12.30 – 12.50 Speaker 3.** Dr. Nur Azma Amin (Universiti Kuala Lumpur, Malaysia) Topic: Psychosocial Factors Among Workers: Reality and Challenges Health Promotion

**12.50 – 13.05 OR-11** WHAT IS THE KNOWLEDGE AND BEHAVIOR OF THE BANGUNJIWO VILLAGE COMMUNITY REGARDING THE USE OF BIOPORI AND COMPOST TO CREATE A HEALTHY ENVIRONMENT

**13.05 – 13.20 OR-12** VITAMIN D AND BREAST CANCER: BIBLIOMETRIC ANALYSIS OF GLOBAL RESEARCH TRENDS

**13.20 – 13.35 OR-13** IMPLEMENTATION OF *HEALTH-PROMOTING UNIVERSITY* THROUGH ANTI-SMOKING EDUCATION FOR STUDENTS

**13.35 – 13.50 OR-14** CORELLATION BETWEEN EMOTIONAL INTELLIGENCE AND DEPRESSION AMONG FIRST-YEAR MEDICAL STUDENTS OF AHMAD DAHLAN UNIVERSITY

**13.50 – 14.05 OR-15** THE EFFECT OF EDUCATION AND MOTIVATIONAL MESSAGES FOR TREATMENT ON THE QUALITY OF LIFE OF TYPE 2 DIABETES MELLITUS PATIENTS

## Room 4

**12.30 – 12.50 Speaker 4.** dr. Yanantri Binga Ramsif, M.Med.Sc, Sp.A (Universitas Ahmad Dahlan, Indonesia) Topic: Preventing and Managing Essential Micronutrient Deficiencies in Infants and Young Children. Food and Nutrition

**12.50 – 13.05 OR-16** EXPLORATION OF COFFEE PLANTS AS A SKIN- BRIGHTENING AGENT

**13.05 – 13.20 OR-17** ANTIOXIDANT ACTIVITY OF UJUNG ATAP LEAVES EXTRACT *(Baeckea frutescens L.)* AND DETERMINATION OF TOTAL PHENOLIC AND FLAVONOID CONTENT

**13.20 – 13.35 OR-18** Unlocking the Potential of Curcuma aeruginosa ROXB Essential Oil: Chemical Profile and Antibacterial Effects Against Acne-Related Bacteria

**13.35 – 14.50 OR-19** THE EFFECT OF CELULASE ENZYME CONCENTRATION FROM *Bacillus subtilis* ON SUGAR AND BIOETHANOL CONTENT FROM COCOA PEEL (*Theobroma cacao* L.) FERMENTATION

**14.50 – 14.05 OR-20** IN SILICO EVALUATION OF BLACK CUMIN OIL CONSTITUENTS IDENTIFIES DITHYMOQUINONE AS A SELECTIVE ANTI-INFLAMMATORY AGENT

**Parallel Session 2 Breakout Room Time 14.15-15.50**

## Room 1

**14.15 – 14.35 Speaker 5.** Punyawee Puchsaka, M.Sc in Pharm., BCCP (Siam University, Thailand) Topic: "Oral Anticoagulants: Key Considerations for Safe and Effective Therapy" Drug Formulation

**14.35 – 14.50 OR-21** PHYSICAL CHARACTERISTIC OF 50% ETHANOL EXTRACT DOSAGE FORMS OF *Moringa oleifera* LEAVES IN LOTION, GEL AND SERUM

**14.50 – 15.05 OR-22** FORMULATION OF KAFFIR LIME PEEL (*Citrus Hystrix*) EXTRACT GRANULES AND LARVICIDAL ACTIVITY TEST ON AEDES AEGYPTI MOSQUITO LARVAE

**15.05 – 15.20 OR-23** DISSOLUTION OF PIROXICAM-POLYVINYLPYROLIDONE K-25 SOLID DISPERSION CAPSULES DURING STORAGE

**15.20 – 15.35 OR-24** SPRAY FILM SOLUTION OF VERNONIA AMYGDALINA EXTRACT PROMOTES DIABETIC WOUND HEALING BY REDUCING POLYMORPHONUCLEAR LEUKOCYTES

**15.35 – 15.50 OR-25** THE EFFECT OF DIFFERENCES IN AEROSIL AND CROSPOVIDONE DRYERS ON THE CHARACTERISTICS OF SOLID-SNEDDS CURCUMIN

## Room 2

**14.15 – 14.35 Speaker 6.** Assist. Prof. Ongun Mehmet Saka (Ankara Univeristy, Turkey) Topic: Personalized health through gene therapy: challenges and opportunities Herbal Medication

**14.35 – 14.50 OR-26** PHYTOCHEMICAL SCREENING AND DETERMINATION OF TOTAL FLAVONOID LEVEL OF ETHANOL EXTRACT OF PURWACENG HERB (*Pimpinella Pruatjan* Molk.)

**14.50 – 15.05 OR-27** ACUTE TOXICITY TEST OF HEALTHY DRINK FLAVYLIUM ANTHOCYANINS FROM BLACK RICE (*Oryza sativa* L. indica) PIGMENTED POLYPHENOLS FROM SPROUTS SOYBEAN (*Glycine max* L.)

**15.05 – 15.20 OR-28** Protective Effect of Kayu Secang (*Caesalpinia sappan* L.) on Wistar Rat's Trachea upon Exposure to Cigarette Smoke

**15.20 – 15.35 OR-29** PHYTOSOME FORMULATION OF RED DRAGON FRUIT EXTRACT

**15.35 – 15.50 OR-30** THE ACTIVITY OF MICROALGAE *Aurantiochytrium* sp. STRAINS RAJA AMPAT AND KEPULAUAN SERIBU FOR INHIBITING TYROSINASE ENZYME

## Room 3

**14.15 – 14.35 Speaker 7.** Wang Zijie, Ph.D (The Second Affiliated Hospital of Nanjing Medical University, China) Topic: "Iguratimod ameliorates antibody-mediated rejection after renal transplant" Clinical Therapy

**14.35 – 14.50 OR-31** DIFFERENCES IN THE EFFECTS OF STATIC STRETCHING AND PASSIVE STRETCHING ON ELDERLY HYPERTENSION REVIEWED FROM THE GENDER OF THE ELDERLY SEEN FROM IL-6 AND CRP VALUES

**14.50 – 15.05 OR-32** ANTIBIOTIC UTILIZATION IN SURGICAL PROPHYLAXIS: A DDD METHOD ANALYSIS FROM AMC HOSPITAL YOGYAKARTA

**15.05– 15.20 OR-33** AGE AND PROSTATE VOLUME RELATIONSHIP IN BENIGN PROSTATIC HYPERPLASIA PATIENTS

**15.20 – 15.35 OR-34** FORMULATION OF SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEM (SNEDDS) OF DAYAK ONION (*Eleutherine palmifolia*) EXTRACT AS A POTENTIAL CANDIDATE OF MCF-7 CELL KILLER IN BREAST CANCER

**15.35 – 15.50 OR-35** SELF-MANAGEMENT AND QUALITY OF LIFE IN TYPE 2 DIABETES PATIENTS AT YOGYAKARTA HEALTH CENTERS

## Room 4

**14.15 – 14.35 Speaker 8.** Dr. apt. Adnan, M.Sc. (Universitas Ahmad Dahlan, Indonesia) Topic: Bioinformatics-Based Drug Repurposing in Systemic Lupus Erythematosus: An Innovative Solution to a Pharmaceutical Challenge Drug Discovery

**14.35 – 14.50 OR-36** SYNTHESIS OF POLYMERIC NANOPARTICLES BY MICROFLUIDIC METHODS EFFECTS OF FORMULATION PARAMETERS ON CHARACTERIZATION

**14.50 – 15.05 OR-37** BIOINFORMATICS ANALYSIS TO IDENTIFY THERAPEUTIC TARGETS OF *ARTOCARPUS ALTILIS* COMPOUNDS IN BREAST CANCER THERAPY

**15.05 – 15.20 OR-38** THE *IN-SILICO* STUDY OF FLAVONOID COMPOUNDS FROM SIRIH KERATON (*Cissus discolor*) AS A POTENTIAL NATURAL ANTI-BIOFILM AGENT BY GLUCOSYLTRANSFERASE ENZYME INHIBITION

**15.20 – 15.35 OR-39** MOLECULAR DOCKING AND ADMET PREDICTION OF *CARICA PUBESCENS* LEAF EXTRACTS: A NATURAL APPROACH TO IL-6 INHIBITION IN INFLAMMATORY PATHWAYS

**15.35 – 15.50 OR-40** FORMULATION & CHARACTERIZATION OF QUERCETIN-LOADED SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEM (Q-SNEDDS)

**Abstract of Invited Speakers**

## Abstract of ORAL Presentation

**Abstract of POSTER Presentations**

Abstract

# CURRENT RESEARCH METHODS OF ANTERIOR PITUITARY CELLS IN THE FIELD OF MEDICAL BIOLOGY/HISTOLOGY

Takashi Yashiro[1]
[1]*Jichi Medical University School of Medicine, Japan*

Corresponding author:

In our laboratory, Department of Histology, Jichi Medical University School of Medicine, we have studied pituitary cell function with it's regulation system. Followings is each researching project: cellular function regulation by extracellular matrix, roles of folliculo-stellate cells in functional tissue construction of the anterior pituitary gland, roes of cell adhesion molecules in development and differentiation of pituitary cells with reference to stem/progenitor cells, roles of locally synthesized retinoic acid in the anterior pituitary. Since our laboratory is a morphology laboratory, we are equipped with the following basic microscope-related instruments: Sliding microtome, Rotary microtome, Cryostat, Ultramicrotome, Ultra-cryo microtome, Vibratome, Research microscopes. In addition, for cell culture system, Inverted microscope, Time laps microscope system, Micro-injection system, and Phase-contrast microscope were equipped. As analyzing ways, we have used Confocal Laser Microscopy, Fluorescence Microscopy, Electron Microscopy, Immunohistochemistry (IHC), In situ Hybridization (ISH), RT-PCR (Reverse Transcription Polymerase Chain Reaction), Real-time PCR, Western Blotting, FACS (Fluorescence Activated Cell Sorting) and LMD (Laser Capture Microdissection). As a conclusion, even in Anatomy/Histology laboratories, it should be normal for research to be conducted not merely by morphological methods, but by multifaceted methods: physiological, biochemical, and molecular-cellular ways. By doing so, new findings will be easier to obtain and confirmed. Thus, we are entering an era in which it is essential to rationally use multiple perspectives and research methods to analyze a certain biological phenomenon, rather than simply sticking to one research method.

Abstract

# USE OF BIOMARKERS IN DECIPHERING HUMAN HEALTH IMPACTS OF ENVIRONMENTAL CONTAMINANTS

Ilker Ates[1]
[1]*Faculty of Pharmacy, Ankara University, Türkiye*

Corresponding author:

Biomarkers have long been used in medicine to diagnose and monitor disease progression and response to therapy. Biomarkers are also a critical tool for evaluating human exposure and response to chemicals in the environment. Diverse biological samples are used by environmental health scientists to measure biomarkers in humans, including blood, urine and other bodily fluids; tissues, such as adipose, bone, teeth and hair; and images of living tissue, such as X-rays. The use of biomarkers of exposure enables epidemiologists to rank subjects according to their exposure level and determine whether the health outcome is significantly correlated with the magnitude of exposure, e.g., is the health effect more prevalent or more severe in individuals with higher exposures relative to those with lower or no exposures?. In this topic, examples of well-established and emerging biomarkers used in environmental health to assess exposure to and effects of chemicals that target the gut, respiratory system and brain were discussed. The gut and respiratory systems are the first organ systems impacted following exposure to environmental chemicals via ingestion or inhalation, which are primary routes of human exposure to chemicals. A number of non-invasive or minimally invasive approaches are available to assess environmental impacts on these organ systems. In contrast, there have historically been few to no biomarkers for assessing environmental impacts on the living brain; however, recent advances in technology for imaging the living brain suggest exciting new approaches for overcoming that challenge.

Abstract

# ANTI-HYPERTENSIVE MEDICATIONS IN THE AGING SOCIETY

Usasiri Srisakul[1]
[1]*Siam University, Thailand*

Corresponding author:

Hypertension is highly prevalent among the elderly, contributing significantly to cardiovascular risks and cognitive decline. Arterial stiffness leads to isolated systolic hypertension, necessitating careful management. Blood pressure (BP) confirmation using home BP monitoring (HBPM) is recommended due to BP variability. Evidence from trials like HYVET and SPRINT demonstrates the cardiovascular benefits of BP reduction in older adults, aiming first for a systolic BP of <140 mmHg, and further to <130 mmHg if tolerated. Management should be personalized, considering frailty, multimorbidity, and risk of adverse effects. A “start low, go slow” approach is emphasized, with monotherapy—preferably with calcium channel blockers (CCBs) or Thiazide/Thiazide-like diuretics—initiated in very old patients. Additional agents such as ACE inhibitors (ACEIs), angiotensin receptor blockers (ARBs), or beta-blockers (BBs) may be considered based on comorbidities like cardiovascular disease, chronic kidney disease, diabetes mellitus, or heart failure. Shared decision-making is crucial to address benefits and risks of the treatment before initiation of the personalized plan, to improve adherence and decrease polypharmacy. Close monitoring and frequent support for self-management are essential for optimal hypertension control in the elderly.

Abstract

LABORATORY-BASED DENGUE SURVEILLANCE FOR PROMPT RESPONSE TO DENGUE HEMORRHAGIC FEVER PREVENTION

Fardhiasih Dwi Astuti[1], Vitri Widiyaningsih[2], Eti Poncorini Pamungkasari[1,2], Achmad Arman Subijanto[2]

*[1]Faculty of Public health, Universitas Ahmad Dahlan, Yogyakarta, Indonesia. [2] Faculty of medicine, Universitas Sebelas Maret, Surakarta, Indonesia.*

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**Background**: Dengue fever, a mosquito-borne viral disease caused by four distinct dengue virus serotypes (DENV-1 to DENV-4), continues to pose a significant public health challenge in tropical and subtropical regions. In 2024, Indonesia reported areas with DHF cases that occurred in 456 districts/cities in 34 provinces, and deaths due to DHF occurred in 174 districts/cities in 28 provinces. Surveillance activities are important to detect outbreaks. The dengue outbreaks are often not detected early due to weak surveillance systems. Timely diagnosis and outbreak response are critical to reducing morbidity and preventing fatalities. Laboratory-based surveillance strengthens early detection, confirmation, and timely intervention strategies. This study aims to implement a laboratory-based dengue surveillance model at the health center level. **Methods**:The study is implementation research. The study is a test pilot implementation of DHF surveillance of a lab-based DHF surveillance and an evaluation of the implementation of a lab-based DHF surveillance. The study used a mixed-method design. Research involves four implementation primary health care and four non implementation primary health care with high DHF cases in districts. Primary health care was randomly selected. Implementation assessment measures the number of DHF cases, precision, and completeness, as well as reports surveillance of DHF-based labs, acceptability, feasibility, and sustainability of lab-based DHF surveillance. **Results**:Surveillance of DHF-based lab for information on dengue infection, dengue program officials can receive it more quickly. A doctor is more appropriate for managing DHF cases. Based on implementation data, 64 reactive NS1 sufferers referred to hospitals as 12 (19.0%). Seven positive IgM results were referred to the hospital, 28.5%. The results of the precision and completeness of the dengue surveillance-based laboratory were obtained timely with 100% and completeness 76, 3%. **Conclusion**: Surveillance of DHF-based labs significantly improves early warning of dengue cases. The implementation surveillance of a based lab is well executed, but regulations require that it be enforced to ensure its continuity. DHF surveillance based in a laboratory is essential to strengthen dengue surveillance systems in Indonesia.

Abstract

PSYCHOSOCIAL FACTORS AMONG WORKERS, REALITY AND CHALLENGES

Nur Azma Amin[1],
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The COVID-19 pandemic has significantly reshaped global employment patterns, accelerating trends that were previously emerging and introducing new dynamics into the world of work. The employment workplace redefined traditional workplace boundaries and continues to evolve with increasing complexity, adoption of remote and hybrid work models, and high-performance expectations. As the work environments grow increasingly complex and demanding, addressing perceived workplace psychosocial factors has become a critical component of organizational success and employee well-being. Despite growing awareness, many workplaces struggle to effectively identify and mitigate these factors due to stigma, limited resources, or lack of awareness. Ultimately, overlooking psychosocial risk factors doesn't just harm employees, it jeopardizes the organization's long-term sustainability, performance, and competitiveness. Proactive engagement with these issues is therefore not only a matter of employee well-being but also a critical component of strategic organizational management to foster healthier, more resilient work environments

Abstract

PREVENTING AND MANAGING ESSENTIAL MICRONUTRIENT DEFICIENCIES IN INFANTS AND YOUNG CHILDREN.

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**Background**. Micronutrient deficiencies during infancy and early childhood can severely impact a child's growth, immunity, and cognitive development. Key micronutrients such as iron, vitamin A, iodine, zinc, and folate are crucial for healthy development, yet millions of children worldwide lack sufficient intake. **Methods**. This review synthesizes findings from recent clinical trials, public health interventions, and nutrition programs targeting children aged 0–5 years. It focuses on strategies including dietary diversification, micronutrient supplementation, food fortification, and health education campaigns. **Results**. Evidence suggests that a combination of targeted supplementation (e.g., iron and vitamin A), food fortification (such as fortified complementary foods), and caregiver education significantly reduces the prevalence of micronutrient deficiencies. Integrated community-based approaches also demonstrate improved health outcomes and developmental indicators in young children. **Conclusion**. Preventing and managing micronutrient deficiencies in early childhood requires multi-sectoral collaboration and sustained interventions. Tailoring strategies to local dietary patterns, healthcare infrastructure, and socioeconomic conditions is critical for long-term impact. Strengthening policy support and expanding access to micronutrient-rich foods remain key priorities to ensure optimal child growth and development.

Abstract

# ORAL ANTICOAGULANTS: KEY CONSIDERATIONS FOR SAFE AND EFFECTIVE THERAPY

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International treatment guidelines from both Europe and the United States recommend the use of oral anticoagulants for the prevention of thromboembolic events, including ischaemic stroke. These anticoagulants fall into two main categories: vitamin K antagonists (VKAs); warfarin, and non-vitamin K antagonist oral anticoagulants (NOACs), which include dabigatran, rivaroxaban, apixaban, and edoxaban. Warfarin works by inhibiting key enzymes involved in vitamin K recycling, primarily VKORC1. Its dosing is highly variable and influenced by dietary vitamin K, alcohol use, smoking, physical activity, comorbidities (e.g., liver disease, thyroid dysfunction), and especially genetic factors. For example, the VKORC1 AA genotype, which increases sensitivity to warfarin, is found in approximately 63.6% of the Thai population. Due to its narrow therapeutic index, warfarin requires regular INR monitoring, and its extensive interaction potential with drugs, herbs, and supplements can increase the risk of bleeding or treatment failure. NOACs, by contrast, offer fixed dosing without the need for routine coagulation monitoring. All four NOACs are substrates of P-glycoprotein and are eliminated to varying degrees via the kidneys, requiring dose adjustments based on renal function. Dabigatran, formulated as a prodrug (dabigatran etexilate), requires an acidic environment for absorption and must be taken intact as capsules—opening or crushing them increases bioavailability by 75%. Rivaroxaban should be taken with food to enhance absorption. Apixaban is preferable in patients with renal impairment due to its lower renal clearance, and edoxaban is less effective when renal clearance exceeds 95 mL/min. Dose reductions are required under specific conditions such as advanced age, low body weight, or concomitant use of P-gp inhibitors. While NOACs simplify anticoagulation management, their use in end-stage renal disease remains limited due to insufficient clinical data.

Abstract

## PERSONALIZED HEALTH THROUGH GENE THERAPY: CHALLENGES AND OPPORTUNITIES

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Due to the advancement of knowledge in the field of genetic diseases and gene technology, the number of treatment options for diseases using gene therapy is increasing. A plethora of clinical trials are underway, encompassing a wide range of inherited and acquired disorders affecting diverse organ systems. Clinical studies encompass the ex vivo modification of haematological stem cells, T lymphocytes and other immune cells, in addition to the in vivo delivery of genes or gene editing reagents to the relevant target cells by either local or systemic administration. In this presentation, the focus will be on the challenges associated with successful gene therapy, with particular emphasis on the alignment of efficacy, safety and stability. In order to achieve the desired outcomes with regard to safety, efficacy and durability, gene-based therapies must meet a number of performance criteria: (i) the delivery system must be precisely directed to its target cells while simultaneously avoiding underlying healthy tissue, (ii) the modified cells must exhibit activity, and (iii) the functional persistence of the genetic material must be ensured. It will be provide a concise overview of the potential challenges that may be encountered.

(i) Safety and toxicity risk: the viral carriers present in the formulations may exhibit virulence properties over time, and there is a possibility of immune responses developing in the second treatment.
(ii) Complexity: The production of gene-modified drug products is complex, and issues such as incompatibility and stability must be considered during application.
(iii) Variability: A considerable degree of variability has been observed in the levels of engraftment of gene-corrected cells across members in different study cohorts in reported gene therapy trials.
(iv) Financial: The financial implications of the research are substantial, encompassing the costs of reagents such as clinical-grade viral vectors and gene editing reagents. Additionally, there are expenses associated with cell processing materials, Good Manufacturing Practices (GMP) facilities, and personnel costs, along with the expenses incurred in research and development of the drug.
(v) Commercialization: The primary obstacles to the development and implementation of gene therapies are not technical in nature but rather financial. In addition to the challenges associated with clinical trials, this class of orphan drugs is prescribed to a limited number of patients at considerable costs, thereby restricting access to the drug for many individuals.

Each of these treatments is confronted with persistent challenges, primarily characterised by their substantial one-time expenses and the intricate process of manufacturing the therapeutic agents, which are biological viruses and cell products, to meet the stringent standards of quality and consistency required for pharmaceutical products. The development of novel reimbursement models is imperative to ensure the widespread accessibility of these cutting-edge treatments to patients in need.

Abstract

# IGURATIMOD AS A NOVEL STRATEGY TO MITIGATE CHRONIC RENAL ALLOGRAFT DYSFUNCTION: INSIGHTS FROM EXPERIMENTAL AND REAL-WORLD STUDIES

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Objective Chronic allograft dysfunction (CAD) is a major cause of kidney transplant failure, driven by fibrosis, mitochondrial dysfunction, and abnormal intercellular interactions. Iguratimod (IGU), an anti-inflammatory drug, has not been studied in kidney transplantation. This study investigates IGU's mechanisms in mitigating kidney fibrosis and explores optimized therapeutic strategies using real-world data, single-cell sequencing, and experimental approaches. Methods : A multicenter real-world study retrospectively analyzed 200 kidney transplant recipients, including 25 treated with IGU, to evaluate its effects on fibrosis and graft function. Primary endpoints included Banff fibrosis scores, eGFR improvement, and urine protein-to-creatinine ratio reduction. Mechanistic studies utilized single-cell sequencing, in vitro models, and knockout mouse kidney transplant models. A hydrogel-based IGU delivery system targeting SPP1+ macrophages was developed and compared to oral IGU. Results : The real-world study demonstrated that IGU significantly reduced fibrosis scores (mean ci score decrease of 1.2 and total Banff score reduction of 22%), improved graft function (eGFR increased by 11%), and reduced urine protein-to-creatinine ratio by 24%. Single-cell sequencing revealed that IGU enhanced β-catenin palmitoylation, promoting its degradation and inhibiting SPP1+ macrophage generation. Mechanistic studies showed that IGU protected glomerular endothelial cells (HRGECs) by preventing SPP1+ macrophage-induced disruption of mitochondrial autophagy. This inhibition reduced NLRP3 inflammasome activation and mitochondrial damage in HRGECs, suppressing endothelial-to-mesenchymal transition (EndMT) and mitigating CAD progression. In mouse transplant models, hydrogel-based IGU delivery significantly reduced SPP1+ macrophage generation, improved antifibrotic efficacy, and demonstrated better safety compared to oral administration. Conclusion, This study, combining real-world data, single-cell sequencing, and experimental models, demonstrated IGU's efficacy in reducing kidney fibrosis and improving graft function. IGU modulates β-catenin signaling and SPP1+ macrophage interactions with HRGECs. The hydrogel-based IGU system optimized therapeutic outcomes, providing a precise approach for CAD treatment and anti-rejection therapy.

Abstract

# BIOINFORMATICS-BASED DRUG REPURPOSING IN SYSTEMIC LUPUS ERYTHEMATOSUS: AN INNOVATIVE SOLUTION TO A PHARMACEUTICAL CHALLENGE

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Background. Systemic lupus erythematosus (SLE) is a systemic autoimmune disease with a complex pathogenesis involving genetic, environmental, hormonal, and immunological factors. Genetic factors play an important role in individual susceptibility to SLE. SLE treatment is still symptomatic and non-specific and carries the risk of causing long-term side effects, so efforts are needed to develop new therapies that are more effective and safe. Drug repurposing allows the discovery of new indications for approved drugs, saving time and money compared to conventional drug development. This study aimed to find potential drugs for SLE from approved drugs. Methods. Potential drugs for SLE from approved drugs are identified using an in silico bioinformatics analysis approach using SNP data strongly correlated with SLE extracted from GWAS and PheWas. The next process is mapping SNPs to the closest genes that may play a role in the pathogenesis of SLE using the Haploreg database. The target gene selection results were matched with the DrugBank drug database to identify drugs that target biological genes related to SLE. Results. The extraction process from the GWAS and PheWas databases resulted in 1262 SNPs correlated with SLE. SNP mapping to nearby genes resulted in 720 genes associated with SLE. Bioinformatics analysis resulted in 28 genes targeted by 85 drugs, both approved and experimental. Of the 85 drugs, 1 drug has been approved for SLE. Conclusion. 84 approved drugs have the potential to be reused for SLE that target genes that are susceptible to SLE.

Keywords: bioinformatics, drug repurposing, genetic variation, in silico, GWAS, PheWas

Abstract

# OR-01 TOXICITY ASSESSMENT OF *Mitragyna speciosa* LEAF EXTRACT USING ZEBRAFISH (*Danio rerio*) EMBRYOS

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**Background:** *Mitragyna speciosa* (commonly known as kratom) is a native plant of Southeast Asia, traditionally used for treating various ailments such as diarrhoea, pain, opioid and alcohol withdrawal, wound healing and intestinal infections. The use of kratom leaves has extended beyond its native region to Western countries. Despite its beneficial effects, the toxicity of kratom has become increasingly evident. Zebrafish shares the similar morphology and physiology of the nervous, cardiovascular and digestive systems with human. Therefore, this study aimed to evaluate the acute toxicity of kratom leaf extract and identify its phytochemical components using the same zebrafish model. **Methods:** The extract was prepared using 100% methanol through ultrasonic-assisted technique, resulting in the 100% U extract. Acute toxicity was assessed using zebrafish embryos in accordance with OECD 236 guidelines, evaluating both lethal and sublethal endpoints. Probit analysis was performed to determine the $LC_{50}$ value and Minitab software version 21.4 was used for statistical analysis of sublethal parameters. Finally, Q-Tof LCMS analysis was conducted to identify the compounds present in the extract. **Results:** The 100% U had a yield of 26.14%. The $LC_{50}$ value for 100% U was found to be 395.26 µg/mL. Moreover, the extract significantly impacted yolk size, eye size, body length, heartbeat, pigmentation and hatching rate ($p<0.05$). Q-Tof LCMS data revealed various phytochemical compounds including alkaloids, flavonoids, saponins, glycosides, phenolic, and other compounds. **Discussion:** Since zebrafish shares the similar morphology and physiology with human systems, they are a suitable model for performing toxicity studies of substances intended for use against human diseases. The current study revealed the toxic effects of 100% U extract on both lethal and sublethal parameters. The identified alkaloids (scopolin, reserpic acid, 16-methoxy-2,3-dihydro-3-hydroxytabersonine, methyl reserpate, brucine, mitragynine, and xestoaminol C) and other compounds (phytosphingosine, C16 sphinganine, C17 sphinganine, and Nb-trans-feruloylserotonin glucoside) might be responsible for the extract's toxicity in the zebrafish model. **Conclusion:** These findings provide a valuable baseline for further studies aimed at reducing the toxicity of kratom leaf extracts. Additionally, the outcomes of this study warrant caution regarding the administration of kratom during pregnancy.

**Keywords:** *Mitragyna speciosa*, toxicity, zebrafish, $LC_{50,}$ Q-Tof LCMS.

Abstract

# OR-02 IDENTIFICATION OF GENETIC VARIATIONS AS RISK FACTORS FOR LEPROSY DISEASE THAT ARE TARGET FOR DRUG

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**Background**. The host immune response influences the severity of leprosy disease caused by Mycobacterium leprae. Genetic predisposition increases susceptibility to infection, with several immune system-related genes identified as risk factors. Complex pathogenesis, genetic factors, and the emergence of drug-resistant strains of M. leprae are challenges in medicine. The study aims to identify genes that contribute to leprosy susceptibility and potential reusable drug candidates.
**Methods**. The study used a bioinformatics analysis approach to identify risk genes and drug repositioning potential. Leprosy-related Single Nucleotide Polymorphism (SNP) data were obtained from the Genome-Wide Association Study (GWAS). Biological leprosy risk genes were determined through five functional annotation criteria using Haploreg, WebGestalt, and g:Profiler. Genes score ≥ 2 are classified as a biological leprosy risk gene. Drug candidates were identified through the DrugBank database.
**Results**. One hundred six leprosy-related SNPs were successfully extracted from the GWAS, and 96 SNPs met the inclusion criteria for further analysis. Analysis of 96 SNPs yielded 57 genes, with nine genes categorized as biological leprosy risk genes. A follow-up analysis using DrugBank, ClinicalTrials, and PubMed revealed that 13 drugs targeting four genes were found, including methotrexate, which is in clinical trials for Pust.
**Conclusion**. The study identified nine genes associated with susceptibility to leprosy and 12 drugs that could potentially be reused to treat it.

Keywords: leprosy, variant genetics, bioinformatics, risk factor, drug repurposing, GWAS

Abstract

# OR-03 PRELIMINARY STUDY ON THE ANTIHYPERGLYCEMIC EFFECT OF NEEM LEAF EXTRACT SUSPENSION IN ALLOXAN-INDUCED DIABETIC RATS

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**Background:** Neem leaves (Azadirachta indica) are known to contain active compounds with potential antihyperglycemic properties. Diabetes mellitus is a chronic metabolic disorder characterized by elevated blood glucose levels that require long-term management. This study aimed to evaluate the antihyperglycemic activity of a neem leaf extract suspension in alloxan-induced diabetic rats. **Methods:** The study was conducted in vivo using three groups of male Wistar rats, each representing a different treatment: negative control (aquadest), positive control (glibenclamide), and treatment with neem leaf extract suspension. All groups were induced with alloxan, administered intraperitoneally at a dose of 150 mg/kg BW. Glibenclamide was given orally at a dose of 0.45 mg/kg BW per day, and the neem extract suspension was administered orally twice daily at a dose of 80 mg/kg BW per dose. The suspension contained 6% neem leaf extract and was formulated with common excipients such as sweeteners, preservatives, and flavoring agents. Blood glucose levels were measured after alloxan induction (H0), 24 hours after treatment initiation (H1), on day 4 (H4), day 8 (H8), and day 12 (H12). The observation lasted for 12 days. Data were analyzed descriptively and visualized in a graph. All procedures were approved by the Institutional Animal Ethics Committee of Universitas Ahmad Dahlan. **Results:** Blood glucose measurements showed that the negative control group experienced an increase from 405 mg/dL (H0) to 527 mg/dL (H8), slightly decreasing to 474 mg/dL (H12), with an overall increase of 17.04%. The positive control group showed a significant decrease from 425 mg/dL (H0) to 100 mg/dL (H12), equivalent to a 76.47% reduction. The neem-treated group demonstrated a marked reduction from 288 mg/dL (H0) to 65 mg/dL (H12), representing a 77.43% decrease. **Discussion:** The reduction in blood glucose levels in the group treated with neem leaf extract suspension suggests its potential antihyperglycemic effect, which was comparable to the standard antidiabetic drug glibenclamide. These findings support the traditional use of neem in diabetes management. Further studies with larger sample sizes and more robust statistical analysis are needed to confirm these results.

**Keywords:** alloxan, antihyperglycemic, Azadirachta indica, glibenclamide, in vivo, neem leaf

Abstract

# OR-04 *CURCUMA CAESIA ROXB*. AS A POTENTIAL ALTERNATIVE THERAPY FOR DIABETIC NEPHROPATHY: A NETWORK PHARMACOLOGY ANALYSIS

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**Background**: Diabetes mellitus is a prevalent non-communicable disease that can lead to complications such as diabetic nephropathy (DN). Conventional treatments often cause side effects like hyperkalemia and heart dysfunction, highlighting the need for safer, more effective therapies. This study investigates the potential of *Curcuma caesia Roxb* as an alternative treatment for DN through an in silico approach. **Methods**: Active compounds from *Curcuma caesia Roxb* were analyzed for pharmacokinetics using SwissADME, based on Lipinski's rules. The target proteins of these compounds were identified using SwissTargetPrediction and compared with DN-encoding proteins from GeneCards via Venny 2.1. Protein-protein interactions were assessed through STRING and visualized using Cytoscape. Additionally, biological pathways were analyzed using KEGG, and molecular activity was examined through WebGestalt. **Results**: The findings revealed 123 specific target proteins for DN, with EGFR and STAT3 identified as core proteins involved in apoptosis, inflammation, and insulin sensitivity regulation. Curcumin, a major component of *Curcuma caesia Roxb*, showed significant activity on the AGE-RAGE and FoxO signaling pathways, both crucial for DN management. **Discussion**: Inhibiting EGFR and STAT3 offers potential therapeutic targets for diabetic nephropathy. EGFR activation by high glucose accelerates kidney injury, while its blockade reduces immune cell infiltration and oxidative stress. STAT3 inhibition prevents cell apoptosis and mitigates diabetic nephropathy progression, supporting its role in treatment strategies. This study provides initial evidence supporting the therapeutic potential of *Curcuma caesia Roxb* as an alternative treatment for diabetic nephropathy by inhibits EGFR and STAT3.

Abstract

# OR-05 ASSESSING RISK PERCEPTION ASSOCIATED WITH UNKNOWN ACUTE HEPATITIS AMONG PARENTS AND EDUCATORS IN EARLY CHILDHOOD EDUCATION SETTINGS

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**Background: Unknown cause of a**cute hepatitis affecting children under 10 years, including those in early childhood education. They require special attention and close monitoring from parents and educators. The health belief model indicates that a person's adoption of health behaviours is determined by their risk perception. This study aimed to examine the risk perception of unknown acute hepatitis among parents and educators, as well as to analyse the correlation between demographic characteristics and parents' risk perception. **Methods:** This study used an analytical observational approach with a cross-sectional design. Participants in this study covered 95 parents and 14 educators in the stage of early childhood education units. A self-administered questionnaire was disseminated directly to evaluate the extent to which various factors correlate with parents' risk perceptions of public health emergencies, specifically unknown acute hepatitis. Descriptive analysis and the chi-square test were perform ed to identify differences in respondents' risk perceptions. **Results:** The research findings indicate that 49 (52%) of parents had a high perception of risk. Meanwhile, 13 (93%) of the surveyed educators had a high perception of risk. The analysis results show that there is no significant relationship between gender ($p = 0.307$), age ($p = 0.936$), education level ($p = 0.510$), occupation ($p = 0.823$) towards risk perception. **Discussion:** Risk perception related to acute hepatitis without known cause among parents in early childhood education units mostly have high risk perception. Risk perception related to acute hepatitis without a known cause among teachers in early childhood education units also showed high risk perception. There is no significant relationship between demographic characteristics (age, gender, education level and occupation) and parents' risk perception of acute hepatitis of unknown cause in early childhood education units.

Abstract

# OR-06 MEDICATION COMPLEXITY IN OLDER ADULTS AT THE GERIATRICS UNIT

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Background: A complex medication regimen has been linked to medication nonadherence, hospitalisation, readmission, reduced quality of life and greater use of healthcare resources among older adults. This study aimed to evaluate the medication regimen complexity in older adults and its potential associations. Methods: A cross-sectional observational study was conducted among older adults at a geriatrics unit. Patients were eligible if they used at least one medication. The patients' data was abstracted from the electronic medical records. Total scores of medication regimen complexity (MRC) and Charlson Comorbidity Index (CCI) were calculated. MRC were categorised under dosage form, dosing frequency and additional instructions. Polypharmacy was defined as the use of five or more medications. Results: A total of 253 patients were included in the study, and the median [interquartile range (IQR)] age was of 81 (74-85) years. The median (IQR) MRC and CCI scores were 18 (13-25) and 3 (1-4), respectively. The majority of the patients were living with family/care givers (82.5) and experienced polypharmacy (78.3%). A statistically significant association was found between high MRC (≥ 15) and polypharmacy ($p < 0.001$), malnutrition ($p = 0.044$), sarcopenia ($p = 0.001$), fragility ($p = 0.016$), diagnosis of diabetes ($p = 0.016$), hypertension ($p = 0.032$), hyperlipemia ($p = 0.027$), asthma/COPD ($p = 0.003$) and high CCI (> 3) ($p = 0.015$). Subcategory analysis of MRC revealed that patients with diabetes were more likely to have higher scores in medication dosage form ($p = 0.001$), dosing frequency ($p = 0.002$), and additional instructions ($p = 0.007$). Similarly, patients with asthma/COPD had significantly higher scores in medication dosage form ($p < 0.001$) and dosing frequency ($p = 0.002$). Discussion: The findings indicate that patients with diabetes and asthma/COPD had more complex medication regimens, potentially due to the use of single or combination of insulin or inhaler therapy with oral medications, which requires frequent dosing and specific instructions. Polypharmacy was an independent risk factor associated with a higher number of medications, contributing to increased regimen complexity. This study highlights the importance of recognizing complex medication regimens in older adults, which may have significant implications.

Abstract

# OR-07 IMPACT OF EDUCATION LEVEL ON WAIST CIRCUMFERENCE AMONG UNIVERSITY WORKERS

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**Background:** Waist Circumference (WC) may be a more accurate indicator of obesity than BMI because it is a simple and more practical method of assessing abdominal fat deposition. It is also a good predictor of future health risks. Level of education may be associated with waist circumference. The study aims to investigate the relationship between educational level and waist circumference (WC) among workers at a university in Yogyakarta. **Methods:** 497 participants were enrolled in this study as part of a medical check-up event in December 2022, with a total sampling method. Education level was determined by secondary data and classified into two groups, group I (senior high school and bachelor degree), and group II consisting of master's and postgraduate degrees. WC is measured by professionals with training. Mann-Whitney and logistic regression models were used to estimate associations**.** **Results:** There were significant mean differences in WC between group I 82,83 cm and group IIr 93,13 cm with a p-value < 0.05. WC was significantly higher for higher education levels among university workers. A higher degree of education had 2,474 greater risks for higher WC than others (OR: 2,474 (95% CI: 1,681-3,641). **Discussion**: Higher WC is strongly associated with a higher education level in this study. The cross-sectional design restricts the generalizability and implications of the results. University workers with higher levels of education should be the primary target of public health programs aimed at reducing obesity. This study emphasizes the necessity of incorporating structured lifestyle interventions to address the increasing burden of obesity, specifically among workers with higher education in university.

Abstract

# OR-08 THE EFFECT OF SQUARE STEPPING EXERCISE ON WALKING SPEED OF ELDERLY

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**Background:** Square Stepping Exercise is a training program that requires physical and cognitive effort, one of which is to increase the walking speed of the elderly which is easy to do without spending a lot of money. This study aims to determine the effect of Square Stepping Exercise (SSE) on the walking speed of the elderly. **Method:** The research design used an experimental method with one group pre-test and post-test design. The population of the study was all elderly who actively participated in the Ngudi Waras Colomadu Elderly Health Post, taken by purposive sampling of 30 people. Balance measurement used the Time up and go test while walking speed used the 10 m walk test. The data analysis technique used the paired t-test. **Result:** Before SSE, the average walking speed of the elderly was 11.320 m/s and the average after it was proven to increase was 10.059 m/s. The results of the paired t-test analysis obtained a t value of 7.021 with a significance value of 0.000 <0.05. This means that there is an effect of Square Stepping Exercise on the walking speed of the elderly. **Discussion:** The findings show that routine SSE administration in the elderly can increase their walking speed. This exercise has been proven to help improve the stability and motor skills of the elderly, including increasing the walking speed of the elderly so that it can improve the dynamic balance of the elderly. The use of this exercise method in a structured, routine manner is very beneficial for increasing the walking speed of the elderly.

Abstract

# OR-09 ASSOCIATION OF DEMOGRAPHIC CHARACTERISTICS, COMORBID DISEASES, AND TYPE OF STROKE WITH THE INCIDENCE OF MORTALITY IN STROKE PATIENTS: A REVIEW LITERATURE

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**Background**: Stroke attacks blood vessels in the brain, divided into hemorrhagic and ischemic. Stroke is the number one cause of death in Indonesia, with an average of 131.8 cases per 100,000 population per year. It is necessary to prevent an increase in the incidence of death due to stroke. Identification of factors related to the incidence of death in stroke patients is essential in efforts to prevent death due to stroke in Indonesia. This study aims to examine the risk factors for death due to stroke, both ischaemic and hemorrhagic stroke. **Methods**: We use the Systematic Literature Review (SLR) method. Literature on factors related to the incidence of death in stroke patients was collected from journal databases in Pubmed, Elsevier, and Google Scholar using specific keywords. From the journal database, 11 journals met the inclusion and exclusion criteria.. **Results**: The results of this literature study indicate that there are many risk factors for death due to stroke, both ischaemic and hemorrhagic stroke. Factors related to the incidence of death in stroke include age, gender, socioeconomic factors, comorbidities, and the type of stroke experienced by the patient. **Discussion**: The findings indicate that factors associated with mortality in stroke patients are complex, ranging from demographic, socio-economic, comorbidities, to stroke type. Based on these findings, efforts to prevent mortality in stroke patients require collaboration with various parties involved in providing patient care from the initial attack to definitive therapy in hospitals. Program developers aiming to reduce mortality in stroke patients should not solely focus on therapeutic management in hospitals. **Recomendation**: A health education program on recognizing stroke symptoms should be developed for community leaders and village health cadres, enabling them to identify stroke symptoms early and promptly call for an ambulance, thereby ensuring stroke patients receive definitive therapy and preventing deaths due to delayed treatment.

Abstract

# OR-10 THE SHADOW SIDE OF CORTICOSTEROIDS: PHARMACOVIGILANCE REVIEW OF ADVERSE DRUG REACTIONS IN INDONESIAN PATIENTS

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In Indonesia, corticosteroids are widely used in medical practice for various indications. However, high-dose and/or long-term use of these drugs carries a significant risk of causing serious adverse effects. Despite this, monitoring of corticosteroid-related adverse events remains limited, highlighting the need for a systematic evaluative approach. Pharmacovigilance offers a solution to identify, assess, monitor, and collect reports, as well as to understand adverse drug reactions, providing a framework for both healthcare professionals and consumers to ensure the safe and appropriate use of medications and prevent undesirable outcomes. This review provides a comprehensive overview of previous studies related to issues and adverse events associated with corticosteroid use in Indonesia, serving as a reference for determining rational, effective, and safe therapy in clinical practice. Scientific articles were sourced from databases including ScienceDirect, Google Scholar, and PubMed, as well as through manual searches using the keywords “pharmacovigilance,” “corticosteroid,” “side effect,” “adverse effect,” and “Indonesia,” according to predefined inclusion and exclusion criteria. A total of eight relevant articles were critically reviewed, covering various corticosteroid dosage forms, patient characteristics, and the types and severity of reported adverse effects. The findings revealed a wide range of adverse reactions, from mild to severe, with increased risks associated with prolonged use and high doses of corticosteroids. This study underscores the importance of implementing pharmacovigilance principles in clinical settings and encourages healthcare providers to enhance their awareness and promote rational corticosteroid use. The outcomes of this review are expected to serve as a foundation for developing safer, more effective, and evidence-based medication policies in Indonesia.

Keywords: Pharmacovigilance, Corticosteroids, Adverse Effects, Drug Rationality, Indonesia

Abstract

# OR-11 WHAT IS THE KNOWLEDGE AND BEHAVIOR OF THE BANGUNJIWO VILLAGE COMMUNITY REGARDING THE USE OF BIOPORI AND COMPOST TO CREATE A HEALTHY ENVIRONMENT

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**Background**: One of the wastes generated by the family is organic waste. Organic waste can provide income if appropriately managed. Biopore technology is a method of processing organic waste in households with large enough yards. Organic waste can be converted into compost using biopore technology or a composter. Compost fertilizer can be used to increase agricultural yields. Although biopore and composter technology are easy to implement and inexpensive, many people still have not utilized the technology. **Aim:** This study aims to improve the knowledge and skills of Bangunjiwo villagers in utilizing biopore and composter technology to process organic waste in the household. **Methods:** We used a quasi-experimental design to improve the knowledge and skills of the community in utilizing biopores and composters. Knowledge and skills were assessed using questionnaires before and after education. Education was provided in two sessions. **Results:** A total of 41 volunteers participated in the education program on biopore and composer technology. The results showed that education on waste management with biopores and composters increased participants' knowledge scores and skills scores in utilizing these technologies ($p<0.05$). **Discussion:** The findings of this study indicate that educational interventions on waste management, employing training methods that incorporate bio pore and ecoenzyme techniques, effectively enhance participants' knowledge and skills. While this educational model demonstrates promise, further validation through additional research using more robust methodologies is necessary, given the quasi-experimental design and limited sample size employed in this study. **Recommendations:** In light of the research findings and the methodology utilized, it is recommended that future studies replicate this research using more rigorous research designs and larger sample sizes to confirm and build upon these results.
Keyword: Biopori, Behavior, Composer, Waste Management.

Abstract

# OR-12 VITAMIN D AND BREAST CANCER: BIBLIOMETRIC ANALYSIS OF GLOBAL RESEARCH TRENDS

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Background: Vitamin D has been increasingly recognized for its potential role in the prevention and management of breast cancer. The growing of research on this topic reflects both scientific curiosity and clinical relevance. However, a systematic bibliometric analysis is needed to map research trends, identify influential studies, and highlight emerging themes in this field. The study aims to perform a bibliometric analysis of publications related to vitamin D and breast cancer to explore global research productivity, collaboration networks, key authors, core journals, and evolving research themes over time.

Methods: A comprehensive search was conducted using the Scopus database for publications from 2014 to 2024 containing terms related to "vitamin D" and "breast cancer" and “carcinogenesis” with final English article limitation apllied. Bibliometric data were analyzed using VOSviewer to visualize co-authorship networks, keyword co-occurrence, and citation analysis. Results: A total of 6972 publications were identified. The number of researches per year has been increasing in the last decade. United States and China emerged as the top contributing countries. International Journal of Molecular Sciences and Cancers are the journal that most frequently publishes the topic. Co-occurrences of the author's keywords show that there are several words related to the vitamin D. Discussion: The bibliometric landscape of vitamin D and breast cancer research reflects growing global attention, with notable contributions from high-income countries and multidisciplinary collaborations. These findings provide valuable insights into the development of the field and may inform future research directions and policy decisions in cancer prevention and treatment.

Abstract

# OR-13 IMPLEMENTATION OF *HEALTH-PROMOTING UNIVERSITY* THROUGH ANTI-SMOKING EDUCATION FOR STUDENTS

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**Background**: *Health Promoting University (HPU)* is an important strategy to increase the productivity of the academic community. This study evaluates the effectiveness of anti-smoking education programs among students to increase knowledge, attitudes, and behaviors. **Methods**: The phase of the program included situation analysis, implementation of interactive educational media, and evaluation. A combination of interactive educational methods was used to convey information to 160 selected participants with a total sampling that passed the inclusion of 190 populations. **Results**: The results showed that the implementation of the healthy campus program could increase student knowledge, which was the basis for behavior change with a p-value of < 0.05 and a mean difference value of 13.56. However, an increase in knowledge is not always followed by a significant change in attitude. Attitudes as determinants of behavior require the support of continuing education, facilities, and the social environment to lead to behavioral change. **Conclusion:** the implementation of a healthy campus at Ahmad Dahlan University is effective in increasing knowledge about the dangers of smoking so it can be recommended as a comprehensive approach to improve campus health. Multi-sectoral collaboration and regulation are necessary for the sustainability of the program. This approach is expected to be able to improve the degree of physical, mental, and social health of the entire academic community.

Keyword: Implementation, Heatlh Promoting University, education anti smoking, students

Abstract

# OR-14 CORELLATION BETWEEN EMOTIONAL INTELLIGENCE AND DEPRESSION AMONG FIRST-YEAR MEDICAL STUDENTS OF AHMAD DAHLAN UNIVERSITY

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*Introduction: Emotional intelligence also known as emotional quotient (EQ) is the ability to understand and manage one's own emotions and the emotions of others, guiding thoughts and actions. High EQ is linked to success in academic and professional settings, while low EQ is associated with mental health challenges such as depression, addiction, and educational difficulties. Depression is a mood disorder characterized by feelings of sadness, emptiness, pressure, irritation, and despair. Previous studies indicate that first-year medical students are a vulnerable group for depression, making it important to study EQ within this group. This research aims to examine the relationship between emotional intelligence and depression levels in first-year medical students.*
*Method: This analytical observational study employed a cross-sectional design with purposive sampling. Conducted at the Faculty of Medicine, Universitas Ahmad Dahlan, Yogyakarta, the study utilized the Emotional Intelligence Scale Questionnaire and the Beck Depression Inventory–II (BDI-II) to assess EQ and depression levels. Data were analysed using the Pearson correlation test for parametric data or the Spearman correlation test for non-parametric data to explore the relationship between EQ and depression.*
*Results: Bivariate analysis using the Spearman correlation test yielded a correlation coefficient (r) of -0.440, with a significance level (p) of 0.001, indicating a statistically significant moderate inverse relationship between EQ and depression severity.*
*Conclusion: The study found a moderate inverse relationship between EQ levels and depression among first-year medical students at Universitas Ahmad Dahlan. Students with higher levels of EQ tend to have lower levels of depression.*

*Keywords: Emotional Intelligence, EQ, Depression, First-Year Medical Students*

Abstract

# OR-15 THE EFFECT OF EDUCATION AND MOTIVATIONAL MESSAGES FOR TREATMENT ON THE QUALITY OF LIFE OF TYPE 2 DIABETES MELLITUS PATIENTS

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**Background**: Diabetes mellitus type 2 (DMT2) is a chronic disease that requires good management to avoid complications that will have an impact on the decline in the quality of life of patients. Appropriate education and psychological support through motivational messages can play an important role in improving the ability of sufferers to manage their condition in order to achieve optimal quality of life. This study aims to determine the effect of providing education and motivational messages on the quality of life of patients. **Methods**: Data collection used quasi-experimental pre-test post-test with control group design. The control group received usual care from the health center and the intervention group received education and motivational messages. Quality of life was measured using the EQ-5D-5L (European Quality of Life-5 Dimension-5 Level) questionnaire and VAS (Visual Analog Scale). Data analysis used descriptive analysis, paired t-test and independent t-test. **Results**: Data collection process involved 62 respondents with type 2 DM. Each of 31 respondents in the control group and intervention group. The results of the independent t-test analysis showed no significant difference ($p = 0.786$) in the quality of life of the control and intervention groups during the pre-test. While in the post-test condition there was a significant difference in quality of life ($p = 0.000$). The results of the paired t-test showed a significant difference ($p = 0.000$) in the quality of life between the pre-test and post-test of the intervention group. While in the control group there was no significant difference ($p = 0.138$). **Discussion**: here is a significant influence on the provision of education and motivational messages for treatment on improving the quality of life of type 2 DM patients at Umbulharjo 1 Health Center, Yogyakarta. This intervention has a positive impact on pharmaceutical services in primary health facilities (health centers).

Abstract

## OR-16 EXPLORATION OF COFFEE PLANTS AS A SKIN- BRIGHTENING AGENT

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**Background**: Coffee leaves, dried coffee beans, and coffee husks possess moderate to high antioxidants. Several studies have also reported that coffee extracts protect skin against UV exposure. Until now, coffee leaves and husks have not been widely utilized. Coffee beans have primarily been used as an ingredient for beverages..This study aims to determine the tyrosinase inhibitory activity and SPF (sun protection factor) values of extracts from coffee leaves, dried beans, and husks in the development of skincare formulations for sun protection and skin brightening. **Methods**: The part of Coffee plant used in this research were leaves, husks and coffee bean ie half-dried, and roasted bean. The research procedure begins with the preparation of extracts using ethanol as solvent, followed by in vitro testing of tyrosinase inhibition and SPF. Tyrosinase inhibition assay was conducted by Tyrosinase activity protocol published by Solarbio Tyrosinase Activity Assay using microplate reader. KitInhibition activity is expressed as IC50. Kojic acid is used as a positive control. The SPF Values were determined spectrophotometrically according with Mansur Method **Results**:The results showed that all extracts at a concentration of 125 ppm have potential as sunscreens with SPF values as follows: half-dried coffee (12.891 ± 0.031), coffee leaves (7.408 ± 0.005), coffee husk (5.291 ± 0.035), and roasted coffee (11.234 ± 0.036). The tyrosinase inhibition test results revealed that the extracts exhibited inhibitory activity with IC50 values (ppm) as follows: kojic acid (3.57), half-dried coffee (160.67), husk (226.55), and roasted coffee (210.76). **Discussion**: Coffee plants have great opportunities as skin- brightening agents.The half dried coffe has the highest activity as skin protector and brightening. The findings suggest that The ability of coffee leaves, coffee beans and skin as tyrosinase inhibitors is thought to be due to the presence of caffeic acid and chlorogenic acid. The roasting process affects the caffeic and chlorogenic acid content, thereby reducing its ability as a tyrosinase inhibitor

Abstract

# OR-17 ANTIOXIDANT ACTIVITY OF UJUNG ATAP LEAVES EXTRACT *(Baeckea frutescens L.)* AND DETERMINATION OF TOTAL PHENOLIC AND FLAVONOID CONTENT

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ABSTRACT

**Background**: Ujung atap leaves (*Baeckea frutescens* L.) is a traditional plant known for its antioxidant properties. This plant contains secondary metabolites such as phenolics and flavonoids. This study aims to determine the total phenolic and flavonoid content of Baeckea frutescens leaf extract and its antioxidant activity based on the $IC_{50}$ value. **Methods**: The total phenolic content was determined using the Folin-Ciocalteu oxidation reaction method, while the total flavonoid content was measured using a colorimetric method based on complexation with $AlCl_3$. Antioxidant activity was assessed using the ABTS method. **Results**: The results showed that the total phenolic content of ujung atap leave extract was 371.69 ± 0.909 mg GAE/g extract, and the total flavonoid content was 24.857 ± 0.165 mg QE/g extract, with an $IC_{50}$ value of 9.289 ± 0.658 ppm. A strong positive correlation was observed between total phenolic and flavonoid content (Pearson correlation = 0.955). In contrast, a strong negative correlation was found between total phenolic content and $IC_{50}$ value (Pearson correlation = -0.952) and between total flavonoid content and $IC_{50}$ value (p = 0.023; Pearson correlation = -0.929). **Discussion**: The strong antioxidant activity of ujung atap leaf extract was influenced by the high content of phenolic and flavonoid content. The phenolic and flavonoid content is considered to be a marker compound in the extract.

*Keywords:* ABTS, Antioxidant, *Baeckea frutescens* L., Total phenolic content, Total flavonoid content

Abstract

# OR-18 UNLOCKING THE POTENTIAL OF CURCUMA AERUGINOSA ROXB ESSENTIAL OIL: CHEMICAL PROFILE AND ANTIBACTERIAL EFFECTS AGAINST ACNE-RELATED BACTERIA

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**Background**: Essential oils, particularly from plants like *Curcuma aeruginosa*, have been gaining interest as potential antibacterial agents. The essential oil of *C. aeruginosa* may contain bioactive compounds with antibacterial properties that can target acne-causing bacteria without the side effects commonly associated with synthetic antibiotics. There is an increasing consumer shift towards natural and plant-based products, particularly in skincare. This study was proposed to determine the chemical content and antibacterial activity of *C. aeruginosa* against acne-causing bacteria. **Methods**: Steam and water distillation were used to isolate the essential oil of C. aeruginosa. Its organoleptic, yield and refractive index were also determined. Gas chromatography-mass spectrometry (GC-MS) was used to identify the compounds that make up essential oils. The diffusion method was used to investigate the antibacterial activity against *Propionibacterium acnes, Staphylococcus epidermidis,* and *Staphylococcus aureus*, the bacteria that cause acne. Microbroth dilution was used to determine the minimum inhibitory concentration (MIC) followed by determination of the minimum bactericidal concentration (MBC). **Results**: The obtained essential oil had a bitter taste, an aromatic odor, and a brownish color with a yield of 0.66% and refractive index of 1.4921. GC-MS analysis reveals 4 dominant components: 1,8 cineole, curzerenone, curdione, and camphor. The inhibition zone diameter varied based on the test bacteria. With an inhibition zone diameter of 9.63 ± 0.35 mm, the 10% essential oil was better at inhibiting *P. acnes* than *S. aureus* (with an inhibition zone diameter of 9.00 ± 1.73 mm) or S. epidermidis (with an inhibition zone diameter of 8.06 ± 0.68 mm). The MIC and MBC values of the essential oil against *P. acnes* were the same at 0.07%. **Discussion:** 1,8-cineole was the most prevalent compound found in *C. aeruginosa* essential oil. 1,8 cineole induces oxidative stress, lipids peroxide, and internal material leaks, disrupting bacterial membranes and finally leading to cell death. However, the antibacterial action of *C. aeruginosa* essential oil may also be attributed to other chemical components. Terpenoids suppress bacterial growth by causing damage to the bacterial cell wall's membrane and decreasing its permeability. . The essential oil of *C. aeruginosa* exhibited antibacterial properties against *S. aureus, S. epidermidis*, and *P. acnes*; however, the inhibition zone's diameter varied based on the test bacteria species. The essential oil of *C. aeruginosa* has the potential to be developed into anti-acne preparations.

Abstract

# OR-19 THE EFFECT OF CELULASE ENZYME CONCENTRATION FROM *Bacillus subtilis* ON SUGAR AND BIOETHANOL CONTENT FROM COCOA PEEL (*Theobroma cacao* L.) FERMENTATION

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**Background**: Fossil fuel sources are decreasing. The solution to overcome this problem is to develop renewable alternative energy such as bioethanol. One of the wastes that can be utilized as bioethanol is cocoa peel. The purpose of this study was to determine the effect of concentration of celulase enzyme *B. subtilis* on sugar content and bioethanol from cocoa peel fermentation using *Zymomonas mobilis* and to determine the most optimal concentration on sugar content and bioethanol from cocoa peel fermentation using *Z. mobilis*. **Methods**: This experimental study used a Completely Randomized Design, the independent variable was the concentration of celulase enzyme *B. subtilis* with treatments of 0%, 3%, 6%, 9%, 12%, 15%, 18%, and 21%. The dependent variable was the sugar content and bioethanol from cocoa peel fermentation using *Z. mobilis*. The research stages included taking cocoa peel, drying, making powder, and pretreatment using NaOH. Making celulase enzyme *Bacillus subtilis* and treatment of celulase enzyme with variations in concentration. Fermentation of cocoa peel powder using celulase enzyme according to treatment. Measurement of sugar content using the DNS method. Fermentation of hydrolysis results using *Z. mobilis* and measurement of ethanol content using an alcohol meter. Data analysis using the one way anova test. **Results**: The most influential concentration of celulase enzyme *B.subtilis* was produced at a concentration of 15% with a sugar content of 0.76 g/mL and a bioethanol content of 2.55%. **Discussion**: Based on the results of the study, it can be seen that the enzyme concentration affects the sugar and bioethanol content of cocoa peel using *Z. mobilis*. Fermentation using *Z. mobilis* results in a decrease in sugar levels to be converted into ethanol so that the reducing sugar levels continue to decrease as ethanol production increases. An important factor in the life of *Z. mobilis* is sugar as an energy source in carrying out metabolism which ultimately affects the concentration of ethanol produced.

Abstract

# OR-20 IN SILICO EVALUATION OF BLACK CUMIN OIL CONSTITUENTS IDENTIFIES DITHYMOQUINONE AS A SELECTIVE ANTI-INFLAMMATORY AGENT

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**Introduction:** Black cumin oil (BCO) possesses well-documented anti-inflammatory properties, largely attributed to its bioactive constituents. This study aimed to evaluate the potential of BCO-derived compounds as selective inhibitors of inflammatory enzymes COX-1, COX-2, and 5-LOX through molecular docking. **Methods:** Five major compounds from BCO—dithymoquinone (A), p-cymene (B), thymoquinone (C), thymohydroquinone (D), and thymol (E)—were selected as ligands. All compounds were assessed for drug-likeness using Lipinski's Rule of Five. Molecular docking was performed using AutoDock Vina against COX-1, COX-2, and 5-LOX, with celecoxib as a reference inhibitor. Binding affinities (kcal/mol) and protein–ligand interactions were analyzed. **Results:** Dithymoquinone (A) showed strong binding affinity towards COX-2 (-9.3 kcal/mol) and 5-LOX (-8.4 kcal/mol), closely matching celecoxib (-9.9 and -8.3 kcal/mol, respectively), and demonstrated lower affinity for COX-1 (-7.5 kcal/mol). Other compounds showed moderate to high affinities but lacked selectivity, particularly for COX-1. **Discussion:** Dithymoquinone formed multiple stabilizing interactions, including hydrogen bonds and van der Waals forces with key residues in COX-2 and 5-LOX, suggesting a strong and specific binding profile. Its lower interaction with COX-1 indicates potential for reduced gastrointestinal side effects compared to non-selective NSAIDs. In contrast, thymoquinone and thymohydroquinone, despite high 5-LOX affinity, also showed significant COX-1 binding, reducing their selectivity. **Conclusion:** Dithymoquinone demonstrates promising selective inhibition of COX-2 and 5-LOX, supporting its potential role as a lead compound in the development of safer anti-inflammatory agents. Further in vitro and in vivo studies are recommended to confirm these findings.

**Keywords:** Black cumin oil, dithymoquinone, in silico, COX-2, 5-LOX, anti-inflammatory, molecular docking.

Abstract

# OR-21 PHYSICAL CHARACTERISTIC OF 50% ETHANOL EXTRACT DOSAGE FORMS OF *Moringa oleifera* LEAVES IN LOTION, GEL AND SERUM

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**Background**: Ethanol extract of 50% moringa leaves has antioxidant, sunscreen, tyrosinase inhibition and antiaging activities so it needs to be developed into a dosage form. The purpose of this study was to determine the effect of base type and extract concentration on physical properties of dosage forms. **Methods**: The study began with maceration of leaf powder using 50% ethanol. The extract was then formulated into serum, lotion, and gel with concentrations in each preparation of 0,5%, 1% and 3%. The preparations were then evaluated with parameters of spreadability, adhesion, pH. **Results**: The test results show that the order from highest to lowest for pH and adhesivity parameters are lotion, gel and serum, while for spreadability it is gel, lotion and serum. Increasing the concentration of extract in lotion causes a decrease in pH, an increase in spreadability and a constant adhesivity value. Increasing the concentration of extract in gel causes an increase in pH, spreadability and adhesivity. Increasing the concentration of extract in serum causes a decrease in pH, an increase in spreadability and a constant adhesivity value. **Discussion**: The findings suggest that differences in the composition of ingredients in lotions, gels and serums cause differences in physical properties.

**Abstract**

OR-22 FORMULATION OF KAFFIR LIME PEEL (*Citrus Hystrix*) EXTRACT GRANULES AND LARVICIDAL ACTIVITY TEST ON AEDES AEGYPTI MOSQUITO LARVAE

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Dengue fever is one of the diseases caused by the Aedes aegypti mosquito, where the frequency of occurrence is very high in Indonesia. Therefore, prevention of dengue fever needs to be done by inhibiting the development of its mosquito vector. One of the Indonesian plants that has larvicidal activity is the kaffir lime (Citrus hystrix). This study aims to determine the effectiveness of the kaffir lime peel extract (Citrus hystrix) as a larvicidal preparation in granular preparations.

This experimental study is the development of a granule preparation of kaffir lime peel extract with variations in concentration of formula 1: 1%, formula 2: 2% and formula 3: 4%, then physical properties tests were carried out including organoleptic, identification of water content, flow rate, and dispersion time and larvicidal activity tests on instar III Aedes aegypti mosquito larvae.

The results showed that 70% ethanol extract of kaffir lime peel contains alkaloids, polyphenols, flavonoids, tannins, terpenoids, and essential oils. The average water content, flow rate, and dispersion time of the granules were 0.98%, 2.25 seconds, and 1.3 minutes, respectively. The larvicidal activity of the granules on the third instar larvae of Aedes aegypti showed the $LC_{90}$ value for this granule was 1.686%.

The conclusion of this study, granules containing purut orange peel extract (Citrus hystrix) have larvicidal activity against the third instar larvae of Aedes aegypti mosquitoes.

***Keywords***: Extract, Peel, Kaffir lime, $LC_{90}$, Larvicide

Abstract

# OR-23 DISSOLUTION OF PIROXICAM-POLYVINYLPYROLIDONE K-25 SOLID DISPERSION CAPSULES DURING STORAGE

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**Background**: Piroxicam is a non-steroidal anti-inflammatory drug showing poor water solubility, leading to a problem in dissolution and absorption in the gastrointestinal tract. Solid dispersion preparation of piroxicam using PVP K-25 increases the dissolution rate, thereby accelerating the drug absorption. This research was intended to explore the dissolution rate enhancement during storage. **Methods**: Piroxicam-PVP K-25 (1:1) solid dispersion was prepared by the solvent evaporation method using acetone. The solid dispersion powder was filled in gelatine capsules (no. 3) and stored for a month at controlled room temperature and RH (27 °C and 75% RH). The sample was collected on 0, 7, 14, 21, and 28 days for an hour dissolution testing using HCl solution (pH 1.2). The piroxicam concentration in the solution sample collected at 5, 15, 30, 45, and 60 minutes was determined spectrophotometrically to calculate 3 dissolution parameters, namely DE60, t80, and C45. **Results**: Before storage, the DE60 values (%) of the initial piroxicam (F1), piroxicam-PVP K-25 solid dispersion (F2), and recrystallized piroxicam (F3) were 65.9, 87.9, and 45.2, respectively, while the t80 values (minutes) were 38.4, 2.7, and 153.6. Moreover, the C45 values (mg) of F1, F2, and F3 were 17.8, 20.3, and 10.7, respectively. The ANOVA test suggested that all three dissolution parameters were constant during storage for F1 and F2, while those for F3 were changed. **Discussion**: The dissolution rate enhancement of piroxicam-PVP K-25 complements the benefit of other types of PVP to solve the BCS class II dissolution problem. The constant dissolution parameters during storage indicated that the piroxicam solid dispersion and the initial one were at the lowest free energy level, hindering a solid-state transformation. Meanwhile, the recrystallization of piroxicam was likely to modify the crystal polymorph, habit, and/or specific surface area, resulting in poor dissolution parameters. However, the solid properties transformed during storage, enhancing the dissolution rate to equal the initial powder.

Abstract

# OR-24 SPRAY FILM SOLUTION OF VERNONIA AMYGDALINA EXTRACT PROMOTES DIABETIC WOUND HEALING BY REDUCING POLYMORPHONUCLEAR LEUKOCYTES

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**Background**: Wound is a physical trauma that causes discontinuity or damage to the integrity of the skin and underlying tissues. In diabetic patients, diabetic wounds pose a significant issue and require proper treatment. Wound healing is essential for the restoration of the severed tissue. The damaged tissue will initiate the wound healing process by substituting the damaged tissue (necrotic tissue) with newer and healthier tissue. During this stage, a vascular response takes place at the wound location marked by the presence of inflammatory cells clustered in the wound and actively migrating along with leukocytes such as polymorphonuclear leukocytes (PMN leukocytes) or neutrophils. The number of neutrophils increases rapidly during inflammation phase and short-lived when there is no infection. The aim of this research to examine the role of spray film solution of *Vernonia Amygdalina* extract (4% w/v) on the scoring number and histopathological images of PMN leukocytes (neutrophils), in accelerating the healing process of diabetic wounds. **Methods:** The wistar rats in this study were induced by alloxan (>200 mg/dL), divided into 3 groups: the negative group received only base of spray film solution, the positive group received Penicillin spray and treatment group received 4% w/v of spray film solution of *Vernonia amygdalina* extract. The rats were anesthetized with Ketamine and wound model were made by punch biopsy. Treatment of each group carried out twice a day. The study data were analyzed by scoring and analytical descriptive by looking at histopathological images of PMN leukocytes. **The results** showed that in 14$^{th}$ day after treatment, the spray film solution of *Vernonia Amygdalina* extract (4% w/v) could reduce the PMN leukocytes (neutrophils). **Discussion:** The number of neutrophils reduces during the treatment of 4% w/v of *Vernonia amygdalina* extract's spray film solution, so that its indicates that the film spray solution could reduce the infection. However, this research design had short period limit to show there is an effect of the spray film solution in diabetic wound healing process. In the future, the research should include many formula concentration of spray film solution with expanded follow-ups to affirm these comes about and investigate effectivity.

Abstract

# OR-25 THE EFFECT OF DIFFERENCES IN AEROSIL AND CROSPOVIDONE DRYERS ON THE CHARACTERISTICS OF SOLID-SNEDDS CURCUMIN

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**Background**: Liquid SNEDDS curcumin obtained in previous studies needs to be converted into a solid form (S-SNEDDS) to overcome limitations such as incompatibility with capsule shells and potential drug leakage. Research objectives: To determine the optimal formulation of S-SNEDDS curcumin using Aerosil 200 and crospovidone as solid carriers, and to evaluate the physical characteristics of the resulting formulations. **Methods:** 1. Optimization of S-SNEDDS curcumin formulation using the adsorption onto solid carrier technique with Aerosil 200 and crospovidone., 2. Evaluation of physical characteristics, including emulsification time, percentage transmittance, particle size, powder flow rate, and angle of repose. **Results:** The percentage transmittance, emulsification time, and angle of repose for S-SNEDDS with Aerosil and crospovidone carriers were: 96.28% and 95.35%; 33.5 and 20.3 seconds; and 19.77° and 48.98°, respectively. Bulk and tapped densities for S-SNEDDS curcumin with Aerosil were 0.51 and 0.65 g/cm³, while those with crospovidone were 0.53 and 0.69 g/cm³. Carr's index was 22% for the Aerosil formulation and 23% for the crospovidone formulation. The Hausner ratios were 1.28 and 1.30, respectively. **Discussion**: The study revealed that the drying carrier significantly affects the physical characteristics of S-SNEDDS curcumin. Formulations with Aerosil exhibited better overall characteristics, meeting standard requirements in all physical tests. In contrast, the crospovidone-based formulation showed poor performance in terms of flowability, particularly in the angle of repose.
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Abstract

# OR-26 PHYTOCHEMICAL SCREENING AND DETERMINATION OF TOTAL FLAVONOID LEVEL OF ETHANOL EXTRACT OF PURWACENG HERB (*Pimpinella Pruatjan* Molk.)

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**Background:** The body's reaction to illness, damage, and infection is inflammation. The typical reaction will contain the infection and keep it under control so that the host is protected rather than harmed. Flavonoid, phenol, and saponin chemicals found in purwaceng may have anti-inflammatory properties. Studies on the phytochemical screening and total flavonoid content of Herba Purwaceng (*Pimpinella Pruatjan Molk*.) ethanol extract have been carried out. Determining the phytochemical and total flavonoid content of an ethanol extract of the Herba Purwaceng Apiaceae family is the goal of this study. **Methods:** This extraction used maceration method of 50% ethanol solvent. The extract obtained was evaporated so as to obtain a thick extract. Furthermore, phytochemical screening tests and layer chromatography of hexanes and ethyl acetate eluents (5:5) were carried out, then identified with UV light 366 nm and AlCl3 spotting. Chemical compounds from ethanol extract of Herba Purwaceng were alkaloid, flavonoid and saponin. For thin layer chromatography identification, hexane and ethyl acetate eluent (5:5) was used, then identified with UV light 366 nm and AlCl3 spotting. Furthermore, flavonoid levels were determined using visible light spectrophotometry with a maximum absorption wavelength of 426.50 nm with a quercetin comparator. **Results:** from the results of the study, the total flavonoid content in purwaceng ethanol extract was 0.07% b/b. **Discussion:** Using UV-Vis spectroscopy and the colorimetric technique using aluminum chloride, the total flavonoid content of the purwaceng plant's ethanol extract was determined to be quercetin. As a flavonoid of the flavonol group with a hydroxyl group on the nearby C-3 and C-5 atoms and a keto group on the C-4 atom, quercetin is the chemical used as a standard in the measurement of flavonoid levels. UV-Vis spectrophotometry was used to determine the total flavonoid concentration because flavonoids contain conjugated aromatic systems that exhibit high absorption bands in the visible and ultraviolet light spectral ranges.

Abstract

# OR-27 ACUTE TOXICITY TEST OF HEALTHY DRINK FLAVYLIUM ANTHOCYANINS FROM BLACK RICE (*Oryza sativa* L. indica) PIGMENTED POLYPHENOLS FROM SPROUTS SOYBEAN (*Glycine max* L.)

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**Background**: A healthy drink derived from a unique combination of flavylium anthocyanin and black rice pigmented with soybean sprout polyphenols, it had the potential to enhance antioxidant effects. However, the safety of this novel combination must be rigorously tested. Therefore, this study was designed to conduct a comprehensive acute toxicity test of the healthy drink flavylium anthocyanins from black rice (*Oryza sativa* L. indica) pigmented polyphenols from sprouts soybean (*Glycine max* L.). **Methods**: A healthy drink was made by extracting black rice with 96% ethanol and 3% citric acid (1:3). The pigmentation process was done by adding hydroxyl groups from soybean polyphenols. The active material was mixed with 20% maltodextrin, shaken, poured into a pan, and dried with a cabinet dryer (60° C). The mixture was stirred with 0.3% sodium, 0.1% citric acid, 50% active ingredients, 5% sucrose as sweetener, 0.05% sodium benzoate, and water added 100 ml. The acute toxicity tests were carried out after obtaining ethical clearance from the UAD ethics committee. The five groups of male *Mus musculus* were acclimatized for 7 days. Group 1 was a control group with oral administration of distilled water, and groups 2, 3, 4, and 5 were consecutively given the treatment of healthy drink with extract doses of 5, 50, 300, and 2000 mg/kg BW. The toxicity symptoms were observed at 30 minutes, 3 to 24 hours, the 3rd day, and the 14th day. **Results**: The results of the acute toxicity test at 30 minutes, 3 to 24 hours, day 3, and day 14 were written on the acute toxicity test clinical symptom observation sheet. The observation was changed in several organs. All test animals, both the control and test groups with various dosage variations, did not experience skin, fur, eyes, or respiratory system changes. All test animals also did not experience weight loss, no changes in behavior, no seizures, tremors, lethargy, diarrhea, and death. **Conclusion:** The acute toxicity test, conducted at doses of 5 mg, 50 mg, 300 mg, and 2000 mg/kg BW, unequivocally demonstrates the safety of the healthy drink. No symptoms of acute toxicity were observed, and there was no discernible difference between the control and treatment groups.

Abstract

## OR-28 PROTECTIVE EFFECT OF KAYU SECANG (*Caesalpinia Sappan* L.) ON WISTAR RAT'S TRACHEA UPON EXPOSURE TO CIGARETTE SMOKE

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**Background**: Indonesian men are among the highest active smokers in the world. Continuous exposure to free radicals from cigarette smoke can cause oxidative stress which causes various diseases, especially in the respiratory tract. Secang or Sappan wood (*Caesalpinia sappan* L.) has been generally consumed as a traditional herbal drink for decades. Its flavonoid constituents have been reported to have antioxidant properties. To date, the protective effects of Sappan wood on the respiratory system have not been widely studied. **Methods**: an *in-vitro* experiment was conducted on 24 male Wistar rats aged 12 weeks with an average weight of 250 grams. Ethanolic extract of Secang was prepared by maceration followed by evaporation to produce a semi-solid dark reddish extract. To assess the safety profile of the extract, the average rat's body weight, and blood biochemistry of SGOT and SGPT were evaluated. Rats were divided into 4 groups: Control (K), Negative control (KN), low-dose treatment of the extract (P1, 300 mg/kg), and high-dose treatment of the extract (P2, 600 mg/kg). Following 30 days of treatments, rats were euthanized by cervical dislocation, and the tracheal organ was isolated for histopathological analysis. **Results**: The average body weights of rats in all groups during the treatment period showed a consistent increase indicating low to tolerable toxicity of the extract which does not interfere with rats' general health. SGPT and SGOT blood serums showed consistent results where serum level in KN significantly ($p < 0.001$) increased (43,70±0.69 and 78.57±1.78, respectively) compared to K (19.26±0.59 and 38.76±0.71, respectively). Blood serums of P1 (27.92±0.62 and 48.19±1.50, respectively) and P2 groups (30.41±0.49, and 53.11±0.99, respectively) significantly decreased ($p < 0.001$) compared to KN, indicating effective hepatoprotective effect of Secang. The lumen diameter (μm) of the trachea significantly ($p<0.5$) decreased in KN (1604±459.8) than in K (1956±482.0), depicting cellular damage from the cigarette smoke exposure. P2 treatment groups showed a significant ($p<0.5$) increase (1947±570.2) in lumen diameter compared to KN which suggests an effective antioxidant effect in reducing cellular damage. **Conclusion**: The findings suggest that Secang has potent antioxidant activities to overcome the adverse effects of cigarette smoke exposure.

Abstract

# QR-29 PHYTOSOME FORMULATION OF RED DRAGON FRUIT EXTRACT

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**Background**: Red dragon fruit (Hylocereus polyrhizus) is a tropical fruit with high antioxidant content. Red dragon fruit flesh extract has a protective effect on fibroblast cell cultures exposed to UVB and can also increase collagen synthesis. It can be used as a base for antiaging creams, but this fruit has low bioavailability. An appropriate delivery medium is needed to be applied to a face cream. One of the widely used media is phytosomes. This study aims to develop a phytosome cream of red dragon fruit flesh extract **Methods**: This study is an experimental research. Red dragon fruit flesh was extracted using a blender and then reduced the water content using a water bath. The extract was tested for moisture using Halogen Moisture Analyzer, and then tested for antioxidant activity with DPPH test. Phytosomes were prepared with a combination of dragon fruit extract and lecithin ratio of 1:1, 1:2, and 1:5. **Results**: The results showed that red dragon fruit flesh extract has a moisture content of 30.31%. The antioxidant activity of the extract was quite high with 54.98% inhibition. Phytosomes with the ratio of dragon fruit extract and lecithin 1:5 produced the optimum formula, with a smaller phytosome particle size and a more moist consistency. **Discussion**: The water content of red dragon fruit extract is 30.31%, so another extraction method is needed so that the water content is below 10%. The inhibitory activity of red dragon fruit extract was 54.98%, indicating that this fruit has high antioxidant activity. Phytosomes with a ratio of red dragon fruit extract and lecithin 1:5 which is a formula with the largest lecithin content to produce phytosome particles that are smaller in size and more moist in consistency.

Abstract

# OR-30 THE ACTIVITY OF MICROALGAE *Aurantiochytrium* sp. STRAINS RAJA AMPAT AND KEPULAUAN SERIBU FOR INHIBITING TYROSINASE ENZYME

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**Background**: Tyrosinase, a significant enzyme in skin pigmentation, is a key player in melanogenesis, melanin synthesis, and skin darkening. *Aurantiochytrium* sp., a microalgae with a global presence in mangrove forests along the coast of Indonesia, including in Raja Ampat Province and Kepulauan Seribu Province, was the subject of this study. Its active compounds were predicted to be excellent natural cosmetics raw materials, with implications extending beyond local applications to the global scientific community. These compounds were believed to prevent or inhibit melanin formation by suppressing tyrosinase activity. This study aims to conduct an in vitro test of the potential inhibition of the tyrosinase enzyme by the microalgae extract *Aurantiochytrium* sp. strain Raja Ampat and Seribu Islands. **Methods**: *Aurantiochytrium* sp biomass from Raja Ampat and Kepulauan Seribu were extracted by the Folch method using chloroform and methanol (2:1). Each extract was dissolved in 1 mL of 1% DMSO and phosphate buffer was added to obtain concentrations of 10, 20, 40, 60, 100, and 150 ppm. Tyrosinase enzyme 333 U/mL and an extract sample of 50 µL were put into a microplate and incubated for 15 minutes (37°C). L-Tyrosine substrate 2.5 mM (100µL) was added and incubated for 30 minutes (37°C). Dopachrome absorbance was read at 492 nm on a microplate reader. Kojic acid was used as a comparison. **Results**: Microalgae *Aurantiochytrium* extract Raja Ampat strain had an inhibition concentration of 50% (IC50) at 133.79 ± 6.87. Furthermore, the Microalgae *Aurantiochytrium* extract Kepulauan Seribu strain had 112.60 ± 4.03. In contrast, kojic acid, as a comparison, had the activity of inhibiting the enzyme tyrosinase 22.05 ± 0.32. Kojic acid and microalgae extract of *Aurantiochytrium* sp. Raja Ampat strain and Kepulauan Seribu strain differed significantly ($p < 0.05$). **Conclusion**: Both Microalgae *Aurantiochytrium* extract Raja Ampat strain and Microalgae *Aurantiochytrium* extract Kepulauan Seribu strain could inhibit the tyrosinase enzyme in a medium category.

Abstract

# OR-31 DIFFERENCES IN THE EFFECTS OF STATIC STRETCHING AND PASSIVE STRETCHING ON ELDERLY HYPERTENSION REVIEWED FROM THE GENDER OF THE ELDERLY SEEN FROM IL-6 AND CRP VALUES

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**Background:** Hypertension is one of the diseases that are often found in the elderly, after menopause, the prevalence of hypertension in women will increase but men have a 2.3 times higher risk of experiencing increased systolic blood pressure compared to women. Efforts to reduce hypertension in the elderly can be done non-pharmacologically, one of which is stretching. This study aims to determine the differences in the effects of static stretching and passive stretching on hypertension in the elderly based on gender in terms of IL-6 and CRP values. **Method:** This study used an experimental method with a 2x2 factorial design. The study was conducted in Surakarta, Central Java with a population of 40 elderly hypertensive samples divided into two groups, static stretch and passive stretch interventions with a purposive sampling method. Hypertension was measured from the values of C-Reactive Protein (CRP) and IL-6. Analysis using two-way ANOVA and if there is evidence of interaction, further testing will be carried out using pairwise comparison. **Results:** Based on the results of the static stretch test on IL6 and CRP levels in elderly hypertensive patients with gender differences, a significance value of p> 0.05 was obtained, with a p value = 0.083 for IL-6 and a p value = 0.926 for CRP. While passive stretch on IL6 and CRP levels in elderly hypertensive patients with gender differences, a significance value of p> 0.05 was obtained, with a p value = 0.991 for IL-6 and a p value = 0.018 for CRP, so based on this it can be concluded that there is no significant difference between genders on IL-6 values, while CRP has a significant difference. **Discussion:** Based on this, it can be concluded that there is no significant difference between genders in IL-6 values, while in CRP there is a significant difference, in this case, female gender has a higher change compared to male gender in CRP changes after static stretching intervention in the elderly with hypertension. The quantity and distribution of body fat affect CRP more in women than in men.

Abstract

# OR-32 ANTIBIOTIC UTILIZATION IN SURGICAL PROPHYLAXIS: A DDD METHOD ANALYSIS FROM AMC HOSPITAL YOGYAKARTA

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**Background**: Surgical site infections (SSIs) are among the most frequent complications after surgery and are associated with increased morbidity, prolonged hospitalization, and higher healthcare costs. Prophylactic antibiotics play a crucial role in preventing SSIs, but inappropriate usage can lead to antimicrobial resistance. This study aimed to evaluate the utilization of prophylactic antibiotics in surgical patients using the Defined Daily Dose (DDD) method at AMC Hospital Yogyakarta. **Methods:** A retrospective, non-experimental cohort study was conducted on 96 surgical inpatients who underwent clean-contaminated procedures between August and November 2024. Data were collected from medical records, including the type, dose, and frequency of antibiotic administration. Antibiotic consumption was quantified using the WHO's DDD methodology and expressed as DDD/100 patient days. **Results:** Ceftriaxone, a third- generation cephalosporin, was the most commonly used prophylactic antibiotic (79.2%), followed by cefazolin (19.8%) and cefotaxime (1%). The calculated DDD/100 patient-days values were
62.85 for cefazolin, 57.79 for ceftriaxone, and 30.00 for cefotaxime. Clinical outcome data showed that 86.5% of patients did not develop SSIs, suggesting the antibiotics used were largely effective in preventing infection. **Discussion:** Although the SSI prevention rate was high, the predominance of third-generation cephalosporin use, particularly ceftriaxone, raises concerns about the potential overuse of broad-spectrum antibiotics in surgical prophylaxis. The use of cefazolin, a narrower-spectrum and guideline-recommended agent for surgical prophylaxis, was significantly lower. This discrepancy may reflect a gap in adherence to evidence-based prescribing practices. The DDD analysis indicates an opportunity for antimicrobial stewardship interventions to optimize antibiotic selection and reduce the risk of resistance development. Promoting the use of narrow-spectrum antibiotics when clinically appropriate could improve both cost-effectiveness and antimicrobial sustainability in the hospital setting.

Abstract

# OR-33 AGE AND PROSTATE VOLUME RELATIONSHIP IN BENIGN PROSTATIC HYPERPLASIA PATIENTS

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**Introduction**: Benign prostatic hyperplasia (BPH) is a proliferation of epithelial and smooth muscle cell in the transition zone of the prostate. Increasing age will increase the risk of developing BPH. Proliferation in the prostate causes an increases in the volume of the prostate gland which can be measured using USG. An enlarged prostate will cause LUTS symptoms which can disturb daily activity. In 2013, there are 9,3 million cases of BPH in Indonesia. Therefore, the aim of this study was to determine the relationship between age and prostate gland volume in BPH patients at RS PKU Muhammadiyah Bantul in January 2023 – Mei 2024. **Metode**: The research is an observasional analytical study with a cross-sectional design. The sampling technique employed was purposive sampling. The total sample size fot the study consisted of 53 BPH patients at RS PKU Muhammadiyah Bantul in January 2023 – Mei 2024. Data analysis was performed using Spearman's Rho correlation test. **Result**: The Statistical test results showed that the manjority BPH patients are aged ≥60 years or elderly (90,6%) and prostate gland volume >30 - ≤60 (56,6%) and the main complaint is obstructive (58,5%). The research findings reveal no significant relationship between age and prostat gland volume in BPH patients at RS PKU Muhammadiyah Bantul in January 2023 – Mei 2024, with a Sig. (2-tailed) of 0.085. The strenght of the relationship is weak with r= 0.239. **Conclusion**: The study concludes that there is no significant relationship between age and prostate gland volume in BPH patients at RS PKU Muhammadiyah Bantul in January 2023 – Mei 2024, with a Sig. (2-tailed) of 0.085.

Keywords: benign prostatic hyperplasia (BPH), age, prostat gland volume, LUTS

Abstract

# OR-34 FORMULATION OF SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEM (SNEDDS) OF DAYAK ONION (*Eleutherine palmifolia*) EXTRACT AS A POTENTIAL CANDIDATE OF MCF-7 CELL KILLER IN BREAST CANCER

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Dayak onion (*Eleutherine palmifolia*) is one of the typical plants of Central Kalimantan empirically used by Dayak tribe to treat various types of disease. Dayak onion is known for containing Naphtoquinone, Anthaquinone, and Napthalene compounds that have an anticancer activity. The aim of this study is to formulate an extract of Dayak onions in a Self-Nanoemulsifying Drug Delivery System (SNEDDS) dosage form, which can improve the bioavailability, solubility, and ability of active substance to kill cancer cells. The selection of excipient was performed with an experimental method by determining the solubility of Dayak onion extract in each excipient. The best formulations are determined based on several test parameters, such as particle size (20-200 nm), polydispersity index (<0.7), zeta potential (≥+30/≥-30 mV) and % transmittance (80-100%). The results show that the optimal formulation of Self-Nanoemulsifying Drug Delivery System (SNEDDS) has the ratio of Cremophor RH 40 : Propylene glycol : Capryol 90 = 41.25 : 13.75 : 45. The formulation can form nanoemulsion in water with a particle size of 26.6±0.12 nm, polydispersity index value of 0.1 ± 0.03, zeta potential value of -39.3±0.35 mV, and % transmittance value of 95.97%. Therefore, the formulation of Self-Nanoemulsifying Drug Delivery System dosage form for the extract of Dayak onion has fulfilled the criteria and can increase the solubility, bioavailability, and pharmacological effects of Dayak onion.

Keyword: Anthaquinone, Cancer, Dayak onion, Napthalene, Naphtoquinone, SNEDDS.

Abstract

# OR-35 SELF-MANAGEMENT AND QUALITY OF LIFE IN TYPE 2 DIABETES PATIENTS AT YOGYAKARTA HEALTH CENTERS

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**Background**: Diabetes mellitus is a metabolic disorder characterized by elevated blood glucose levels. Effective self-management is essential to support patient treatment and achieve optimal therapeutic outcomes. Proper self-management helps regulate blood sugar levels and enhances quality of life. This study aims to determine whether there is an association between self-management and the quality of life of patients with type 2 diabetes mellitus during treatment. **Methods**: This study employed a cross-sectional research design. The sample consisted of type 2 diabetes mellitus (DM) patients who had routine check-ups at the Mergangsan and Tegalrejo Health Centers. The study was conducted from February to April 2024, involving 194 respondents. Data were collected using a self-management questionnaire and the Diabetes Quality of Life Clinical Trial Questionnaire (DQLCTQ). The Spearman Rank correlation test was to analyze the relationship between self-management and quality of life domains. **Results**: The characteristics of the respondents showed that most of them were female (74.2%), the age range was 54-62 years (43.3%), and the last education level was high school (40.7%). The results of research on self-management of patients with type 2 DM during treatment have a good category (98.5%). Based on the results of correlation analysis, it is known that there is a relationship between self-mangement and quality of life in the energy domain (p-value 0.000), health pressure (p-value 0.000), mental pressure (p-value 0.000), personal satisfaction (pvalue 0.000), treatment satisfaction (p-value 0.000), treatment effects (p-value 0.000) and frequency of disease symptoms (p-value 0.000). However, there was no relationship between self-mangement and quality of life in the physical function domain (p-value 0.176). **Discussion**: There is a relationship between self-management of patients with type 2 diabetes during treatment with quality of life in the domains of energy, health pressure, mental pressure, personal satisfaction, treatment satisfaction, treatment effects and frequency of disease symptoms. But, there was no relationship between self-mangement and quality of life in the physical function domain.

Abstract

# OR-36 SYNTHESIS OF POLYMERIC NANOPARTICLES BY MICROFLUIDIC METHODS EFFECTS OF FORMULATION PARAMETERS ON CHARACTERIZATION

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**Background**: Microfluidic technology enables the manipulation of small fluid volumes through channels ranging from tens to hundreds of microns. It offers precise control over particle formation with minimal reagent use, making it a promising alternative to traditional nanoparticle synthesis methods. Unique flow dynamics and enhanced mass transfer in microfluidic systems allow the synthesis of diverse micro/nanoparticles with controlled size, shape, and distribution. This study investigates the effects of formulation parameters on nanoparticle characterization. **Methods**: Polymeric nanoparticles were synthesized using an emulsification solvent evaporation method within a microfluidic platform. Formulations were optimized by varying polymer concentrations and surfactant types and concentrations. Five different flow rate ratios (FRR) of aqueous to organic phases were tested. Nanoparticle size, distribution, zeta potential, and PDI were characterized using dynamic light scattering. Morphology was analyzed using Transmission Electron Microscopy (TEM), while thermal properties were assessed using Differential Scanning Calorimetry (DSC). **Results**: The effects of surfactant type and concentration, FRR and polymer concentration on nanoparticle size, distribution, zeta potential and PDI were investigated. Increasing the polymer phase flow rate resulted in larger particle sizes, while increasing the surfactant phase flow rate resulted in smaller particles. The PDI values of the formulations ranged from 0.035 to 0.24, with the lowest value (0.035) indicating a narrow size distribution, which is considered optimal for polymeric nanoparticles. The average particle size reached as low as 120 nm, achieved by tuning the FRR, providing a precise and predictable control. TEM images confirmed the formation of spherical nanoparticles. All PLGA nanoparticle formulations showed a zeta potential greater than |-20| mV indicating stability. PLGA nanoparticles with desired size and distribution were successfully produced by microfluidic method and the effect of formulation parameters of the microfluidic system on the nanoparticles was evaluated. **Discussion**: The results suggest that microfluidic systems hold significant promise for the controlled production of polymeric nanoparticles with tunable properties, such as particle size, distribution, and stability. The ability to adjust formulation parameters provides a reliable means of nanoparticle production. However, a deeper understanding of system behavior and the optimization of processing parameters is needed for further refinement.

Abstract

# OR-37 BIOINFORMATICS ANALYSIS TO IDENTIFY THERAPEUTIC TARGETS OF *ARTOCARPUS ALTILIS* COMPOUNDS IN BREAST CANCER THERAPY

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**Background**: Breast cancer is an adenocarcinoma characterized by high genetic and clinical heterogeneity, making it the most commonly diagnosed cancer worldwide, with 2.3 million new cases and 685,000 deaths in 2020. Treatment includes surgery, radiation, chemotherapy, endocrine therapy, and targeted therapy, which often come with significant side effects. *Artocarpus altilis*, a plant rich in flavonoids and other bioactive compounds, has long been used in traditional medicine and shows promise as an anticancer agent. This study aims to identify potential therapeutic targets of *Artocarpus altilis* for breast cancer treatment through bioinformatics analysis. **Methods**: Using a network pharmacology approach, the research involves drug-likeness screening, protein target prediction, protein-protein interaction analysis with StringDB, and pathway visualization via KEGG. Gene Ontology analysis was also conducted to assess molecular activity. **Results**: Screening of *Artocarpus altilis* compounds for drug-likeness and bioavailability revealed three compounds with poor results based on Lipinski's rule. Protein target identification highlighted 15 key proteins, with EGFR and IGF1R as primary targets. KEGG pathway analysis identified significant pathways related to cancer progression, including "Progesterone-mediated oocyte maturation" and "EGFR tyrosine kinase inhibitor resistance". **Discussion**: Breast cancer inhibition with EGFR and IGF1R involves inhibition of signaling pathways that support cancer cell proliferation, invasion, and metastasis. EGFR activates the PI3K, MAPK, and JAK/STAT pathways that play a role in tumor migration, while IGF1R influences cancer progression through cell proliferation and lymphatic vessel formation. The findings suggest that EGFR and IGF1R play crucial roles in the anticancer activity of *Artocarpus altilis*, offering potential therapeutic targets for breast cancer.

Abstract

# OR-38 THE *IN-SILICO* STUDY OF FLAVONOID COMPOUNDS FROM SIRIH KERATON (*Cissus discolor*) AS A POTENTIAL NATURAL ANTI-BIOFILM AGENT BY GLUCOSYLTRANSFERASE ENZYME INHIBITION

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Background: *Cissus discolor)*, a species of Cissus Lin, is a rare plant known locally as Sirih keraton. Based on LC-HRMS analysis, the flavonoid compounds are one of the essential active constituents of the ethanolic extract of *Cissus discolor.* The mechanism of action of flavonoids and polyphenol compounds as antibiofilm is associated with the inhibition of glucan synthesis catalyzed by the glucosyltransferase enzyme. The purpose of this study was to investigate by in-silico study of the anti-biofilm potency of flavonoids, the chemical constituent of ethanolic extract of *Cissus discolor*, against the glucosyltransferase enzyme (PDB code:6SYR). Methods: The methods were initiated by the preparation of a protein structure database glucosyltransferase enzyme (6SYR), protein preparation using the Biovia Discovery Studio application, and molecular docking simulation of flavonoid compounds on proteins using the Autodock 4.0 application and its visualization. The docking method was validated by re-docking analysis of native ligands about the glucosyltransferase enzyme (6SYR). Results: The validation of the docking method by re-docking analysis revealed the RMSD value was 1.571 Å, less than 2 Å. Results: The results of docking six flavonoid compounds with the glucosyltransferase enzyme showed a best binding affinity energy of 5-(5,7-Dihydroxy-3-methoxy-4-oxo-4H-chromen-2-yl)-2-hydroxyphenyl beta-D-xylopyranoside (-8.42 kcal/mol). Its binding energy was higher than the native ligand ( -7.04 kcal/mol), tetracyclin (-7.10 kcal/mol) and quercetin (-6.15 kcal/mol), then followed by 5,7-dihydroxy-2-(2,3,4-tri hydroxyphenyl)-4H-chromen-4-one (-7.24 kcal/mol), 2-(2,4-dihydroxy phenyl)-3,5,7-trihydroxy-4H-chromen-4-one (-6.28 kcal/mol), and Myricitrin (-6.26 kcal/mol). The main interactions were the hydrogen bonds with amino acids LYS 280, ASN 296, and THR 297. Discussion: Based on the RMSD value of re-docking, the result showed that the conformation of the native ligand from the docking method is similar to its conformation in nature protein by a deviation of less than 2 Å. The six flavonoid compounds of the ethanolic extract of *Cissus discolor* met the Lipinski rule of five and the appropriate pharmacokinetic profile in the oral dosage form. In conclusion, the flavonoid compounds in *Cissus discolor* is potential to be developed as natural anti-biofilm agents by further in vitro and in vivo investigation.

Abstract

# OR-39 MOLECULAR DOCKING AND ADMET PREDICTION OF *CARICA PUBESCENS* LEAF EXTRACTS: A NATURAL APPROACH TO IL-6 INHIBITION IN INFLAMMATORY PATHWAYS

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**Background**: Interleukin-6 occupies an important role in mediating both acute and chronic inflammatory processes, and its involvement in various inflammatory diseases makes it a relevant focus for further study in the context of developing natural anti-inflammatory agents. *Carica pubescens* has activity as an anti-inflammatory. Although there is preliminary evidence of anti-inflammatory effects, the molecular therapeutic potential of *C. pubescens* remains largely unexplored. **Methods**: Bioactive compounds from *C. pubescens* were obtained based on the results of LC-HRMS analysis, and their 3D structures were downloaded and prepared using Biovia Discovery Studio for optimization. The structure of IL-6 target protein was downloaded from Protein Data Bank (PDB) and prepared by removing ligands and water. The molecular docking process was performed using PyRx to evaluate the affinity and binding energy. The docking results were then visualised and analysed for hydrogen bond interactions and active residues using PyMOL and Biovia Discovery Studio. Pharmacokinetic and toxicity predictions of the compounds were performed using ADMETlab 2.0 to assess the feasibility of the compounds as nature-based anti-inflammatory drug candidates. **Results**: The chromatographic separation of *C. pubescens* leaf extract resulted in eight compounds, namely kaempferol; 5,7-dihydroxy-2-(2,3,4-trihydroxyphenyl)-4H-chromen-4-one; quercetin; 2-(2,4-dihydroxyphenyl)-3,5,7-trihydroxy-4H-chromen-4-one; isorhamnetin; quercetin-3β-D-glucoside; rutin and mauritianin confirmed via LC-HRMS spectra data. The highest binding affinity was obtained for the active compound, mauritianin (ΔG) -7.80 kcal/mol, while diclofenac sodium as a control had a lower binding affinity (ΔG) -5.80 kcal/mol. ADMET predictions provide information that the five active compounds C. pubescens meet the requirements to be developed as natural anti-inflammatory agents. **Discussion**: In silico approaches such as molecular docking and ADMET prediction allow early analysis of the interaction of bioactive compounds with target proteins such as IL-6, so that the anti-inflammatory potential of *C. pubescens* can be explored more efficiently and purposefully. The method used is able to provide a comprehensive overview of the potential interaction of compounds with protein targets as well as prediction of pharmacokinetic and toxicity characteristics. The results of molecular docking studies and ADMET predictions indicate that the active compounds of C. pubescens have the potential to be developed as natural anti-inflammatory agents.

Abstract

# OR-40 FORMULATION & CHARACTERIZATION OF QUERCETIN-LOADED SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEM (Q-SNEDDS)

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**Background**: Quercetin is a flavonoid with a relatively high antioxidant activity but barely soluble in water. Self-nanoemulsifying drug delivery system (SNEDDS) is a lipid-based formulation that is able to improve the solubility of poorly water-soluble entities. SNEDDS is a concentrate of oil, surfactant, and co-surfactant mixture (S-mix) that spontaneously forms oil-in-water nanoemulsion with gentle agitation upon contact with water. The selection of SNEDDS components is crucial as it direclty governs the efficacy of emulsification and stability of the SNEDDS. **Methods**: This experimental study include the use of Capryol 90, Cremophor RH40, and Transcutol HP as oil, surfactant, and co-surfactant, respectively, with various S-mix compositions of 10-30% oil, 50-80% surfactant, and 0-40% co-surfactant to form SNEDDS pre-concentrate. The pseudo-ternary phase diagram was empolyed to select optimal ratios of these SNEDDS components. In addition, the SNEDDS were characterized including emulsification time, droplet size, polydispersity index, zeta potential, % transmittance, loading capacity, and stability studies. **Results**: The SNEDDS with S-mix compositions of 10-20% of Capryol 90, 60-70% Cremophor RH40, and 10-30% Transcutol HP demonstrated typical bluish SNEDDS appearance upon introduced to aqueos media. These SNEDDS forms droplets with mean < 300 nm, PDI < 0.3, and % transmittance close to 100%, indicating transparent monodisperse nanoemulsions were formed. The loading capacity of the SNEDDS ranging from 50-70%. Furthermore, the SNEDDS were relatively stable thermodinamically as evaluated during stability test. **Discussion**: SNEDDS with S-mix compositions of Capryol 90 > 20%, Cremophor RH 40 < 50%, and Transcutol HP > 30% experienced milky to turbid apperances after contacted with water. This indicates SNEDDS with these compositions display inadequate surfactant-to-oil ratio leading to coarse droplet formations.
**Keywords:** Characterization, Formulation, Quercetin, S-mix, SNEDSS

Abstract

# PO-01 THE EFFECT OF POLYSTYRENE MICROPLASTIC EXPOSURE IN THE REARING WATER ON MUSCLE HISTOMORPHOMETRY OF MUTIARA CATFISH (*Clarias gariepinus* Burchell, 1822)

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**Background**: Detection of microplastics in freshwater environments can lead to their accumulation in fish. Polystyrene (PS) is one of the most abundance microplastics in freshwater. This study aims to determine the effect of PS microplastic abundance in the rearing water on muscle tissue, diameter and area of myofibers in Mutiara catfish. **Methods**: A total of 120 fishes were exposed to PS microplastics in the rearing water for 28 days at concentrations of 0 mg/L, 1 mg/L, 10 mg/L, and 100 mg/L. Muscle samples from the right abdominal area were collected and prepared using the paraffin method with hematoxylin-eosin staining. The abundance of microplastics in muscle tissue was extracted with KOH 10%. Microplastics were observed using stereo microscope. Myofibers diameter was measured using Image-Raster. The data were analyzed using the Kruskal-Wallis test. **Results**: The results showed a significant difference between treatments ($P$<0.05) in microplastic abundance, myofiber diameter and area. The lowest abundance of microplastics in the muscle found in control (0 ± 0.00 particles/g), while the highest was in T3 (2.63 ± 2.72 particles/g). The smallest myofiber diameter was in T2 (83.58 ± 25.01 µm), with the largest in control (122.11 ± 40.06 µm). For myofiber area, the lowest value was in T2 (5.96 ± 3.77x10³ µm²), and the highest in control (12.94 ± 8.65x10³ µm²). **Discussion**: Exposure of PS microplastics affects the abundance of microplastics in muscle, reduce myofiber diameter and area. Myofiber growth that is not optimal will have an impact on the elasticity and compactness of the meat. Moreover, muscle injuries may serve as an indicator of exposure to environmental contaminants. This research emphasizes the need for further investigation into the broader effects of microplastics on aquatic organisms and human health.

Abstract

# PO-02 PROTECTIVE EFFECTS OF RED SPINACH (*Amaranthus Tricolor* L.) ETHANOLIC EXTRACT ON TRACHEAL HISTOPATHOLOGY IN CIGARETTE SMOKE-EXPOSED WISTAR RATS

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**Background**: Cigarette smoke generates free radicals that can lead to various respiratory disorders. Red spinach (*Amaranthus tricolor* L.) is a plant rich in antioxidants, which may help counteract the free radicals produced by cigarette smoke exposure. This study aimed to evaluate the protective effects of red spinach on the trachea of Wistar rats exposed to cigarette smoke. **Methods**: Twenty-four male Wistar rats were divided into four groups: K (distilled water), KN (cigarette smoke exposure), P1 (cigarette smoke exposure with 200 mg/kg body weight (BW) extract), and P2 (cigarette smoke exposure with 400 mg/kg BW extract). The treatments were administered for 21 days. On day 22, the rats were euthanized, and their tracheas were collected for analysis. The tracheal tissues were prepared using the paraffin method and stained with hematoxylin-eosin. The observed parameters included epithelial cell height, lumen diameter, and the number of goblet cells in the trachea. All data were analyzed using ANOVA followed by Duncan's post hoc test ($p < 0.05$). **Results**: The results indicated that exposure to cigarette smoke without the administration of an extract (KN) caused significant damage to the histological structure of the trachea ($p < 0.05$). However, administering 400 mg/kg BW of red spinach ethanol extract demonstrated a protective effect, as it maintained epithelial cell height, lumen diameter, and goblet cell count similar to the normal conditions observed in the control group (K). **Discussion**: the administration of 400 mg/kg BW of red spinach ethanol extract effectively protects the tracheal structure of Wistar rats from damage caused by cigarette smoke exposure. The content of antioxidants such as flavonoids and betacyanins in red spinach acts as a preventive agent that maintains the structure of the trachea. The compound acts as an anti-inflammatory so that it can help prevent deciliation on the surface of tracheal epithelial cells and reduce the increase in the number of goblet cells. **Conclusion**: Red spinach ethanol extract with a dose of 400 mg/kg BB can maintain the height of tracheal epithelial cells, tracheal lumen diameter, and goblet cell count similar as normal conditions.

Abstract

# PO-03 ANTIMICROBIAL AND ANTIOXIDANT POTENTIAL OF *Penicillium* sp. ENDOPHYTIC FUNGI ISOLATED FROM BANANA PLANTS

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**Background:** Antibiotic resistance is a growing global concern, necessitating the search for alternative antibacterial agents from natural sources. Endophytic fungi have been widely reported to produce bioactive compounds with potential therapeutic applications. This study aimed to isolate and characterize endophytic fungi from banana plants and evaluate their bioactive properties. **Methods**: Endophytic fungi were isolated from banana plant tissues and identified based on morphological characteristics, leading to the identification of *Penicillium* sp. Metabolite extraction was performed, followed by antioxidant and antimicrobial activity assays. Antioxidant activity was assessed using the $IC_{50}$ method, while total phenolic and flavonoid contents were quantified. Antimicrobial activity was evaluated against *Bacillus cereus*, *Propionibacterium acnes*, *Staphylococcus aureus*, and *Escherichia coli* by measuring inhibition zones. **Results**: The isolated Penicillium sp. demonstrated antioxidant activity with an $IC_{50}$ value of 1971.25 ppm, total phenolic content of 34.76 mg GAE/g, and total flavonoid content of 19.15 mg QE/g. Antimicrobial activity tests showed inhibition zones of 2.6 cm for *Bacillus cereus*, 2.2 cm for *Propionibacterium acnes*, 2.6 cm for *Staphylococcus aureus*, and 2.0 cm for *Escherichia coli*. **Discussion**: The findings suggest that endophytic *Penicillium* sp. from banana plants produces bioactive metabolites with significant antimicrobial and antioxidant potential. These results highlight the potential application of endophytic fungi-derived compounds as natural antibacterial agents. However, further studies, including molecular identification, compound purification, and mechanistic investigations, are necessary to validate these findings and explore their therapeutic potential.

Abstract

# PO-04 REDUCING OXALATE LEVELS IN COCOYAM (XANTHOSOMA SAGITTIFOLIUM) PETIOLES USING CITRIC ACID SOLUTION TO PRODUCE FOOD-GRADE FLUOR

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**Background**: The cocoyam plant is a valuable source of carbohydrates. Currently, the tuber is the part that is commonly used, while the petiole is often discarded due to causing itching and burning sensations in the mouth when consumed. The high oxalate levels in cocoyam petioles are a concern because they can harm the body, particularly the kidneys, as oxalate crystals may lead to kidney stones. This study investigates the effect of a citric acid solution on reducing oxalate levels in cocoyam petioles, focusing on the concentration of citric acid and the duration of soaking. **Methods**: The research was conducted experimentally in the Chemical Engineering Laboratory at Universitas Ahmad Dahlan in Yogyakarta, Indonesia. One hundred grams of thinly sliced cocoyam petioles were soaked in 250 mL of citric acid solution in 1%, 5%, and 10% for 15 minutes. After soaking, the samples were rinsed with distilled water and filtered. The oxalate content in the cocoyam petioles was analyzed through titration using a potassium permanganate solution. **Results**: Soaking thinly sliced cocoyam petioles in a 10% citric acid solution for 15 minutes can reduce oxalate levels by up to 40%. **Discussion**: Citric acid interacts with calcium oxalate in the cocoyam petioles, allowing the oxalate to dissolve in water and be released from the petioles' fiber. As a result, the oxalate content in the fiber of cocoyam petioles is effectively reduced.

Abstract

# PO-05 SNEDDS CURCUMIN IMPROVES SPATIAL MEMORY AND ACETYLCHOLINESTERASE ACTIVITY IN A DEMENTIA MODEL RAT

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**Background**: Dementia is a collection of neurodegenerative disorder symptoms characterized by a progressive decline in memory and cognitive functions. Curcumin is a polyphenol capable of modulating various signaling pathways as an antioxidant, anti-inflammatory, and anti-acetylcholinesterase (anti-AChE), thus potentially acting as a neuroprotector. However, due to the low solubility of curcumin, the formulation of curcumin in SNEDDS preparations is expected to enhance its activity. This research is a continuation of previous studies that have formulated SNEDDS curcumin. This research aims to determine SNEDDS curcumin's activity on spatial memory and acetylcholinesterase activity in a dementia model rat. **Methods**: A total of 30 Sprague Dawley rats were divided into six groups, each receiving the following treatments: The normal group was injected with NaCl 0.9% (i.p) and CMC-Na solution (p.o); the TMT group was given CMC-Na (p.o); the Control group was given Citicoline at a dose of 120 mg/kg BW (p.o) and curcumin at a dose of 100 mg/kg BW (p.o); the other groups were given SNEDDS curcumin at doses of 7 mL/kg BW and 12 mL/kg BW. All treatment groups on day 8 were injected with TMT at 8 mg/kgBW (i.p) except for the normal group. The treatment was administered for 28 days. Spatial memory testing with the Morris Water Maze test was conducted on days 22-27, and on day 28, blood samples were taken to measure AChE activity. The data obtained were statistically tested using one-way ANOVA followed by LSD test. **Results**: The Morris Water Maze test results show that TMT injection can reduce spatial memory and increase AChE activity. The administration of SNEDDS curcumin at a dose of 12 mL/kgBW was able to improve spatial memory and reduce AChE activity significantly ($p<0.05$) compared to the TMT and Curcumin groups, but not significantly ($p>0.05$) compared to the citicoline group. **Discussion**: Excessive AChE activity causes a decrease in acetylcholine levels, disrupting communication between neurons and triggering a decline in cognitive function, including spatial memory impairment. The administration of SNEDDS curcumin enhances curcumin's ability as a neuroprotector in the brain, thereby preventing dementia. Based on the results, the SNEDSS formula has antidementia activity by enhancing spatial memory and inhibiting AChE activity.

Abstract

# PO-06 EFFECT OF AVOCADO LEAF ETHANOL EXTRACT GEL (*Persea Americana* Mill) ON HEALING DIABETIC WOUNDS

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**Background**: Diabetic wounds are a major clinical challenge due to delayed healing and increased risk of complications. Previous studies have shown that ethanol extract from avocado leaves (Persea americana Mill.) accelerates tissue regeneration in diabetic wounds. However, its effectiveness in a gel formulation remains unexplored. Therefore, this study aimed to develop an avocado leaf ethanol extract-based gel and evaluate its wound-healing potential in diabetic mice. **Methods**: Avocado leaves were extracted using 96% ethanol and then incorporated into a gel formulation. The gel's physical properties were assessed to ensure formulation stability and suitability for topical application. To evaluate its wound-healing efficacy, diabetic mice were divided into five groups: normal control (non-diabetic), negative control (gel base), positive control (bioplacenton ointment), and two treatment groups (5% and 10% gel). Diabetes was induced using alloxan (150 mg/kg BW), followed by standardized wound creation and treatment. Wound healing was monitored through visual assessment, wound diameter reduction, and healing time. Statistical analysis was performed using one-way ANOVA (SPSS) with a 95% confidence level. **Results**: The results indicated that avocado leaf ethanol extract gel met the required physical stability criteria and demonstrated significant wound-healing activity in diabetic mice. These results suggest that avocado leaf gel has potential as a novel therapeutic option for diabetic wound management. **Discussion**: Avocado leaf ethanol extract gel 5% showed wound healing activity because it has active components including saponins, tannins, alkaloids and flavonoids. It is necessary to analyze the specific components of avocado leaf gel that have the effect of healing wounds.

Abstract

# PO-07 INHIBITION OF INFLAMMATION BY NANOEMULSION CONTAINING BLACK CUMIN SEED OIL AND TEMULAWAK EXTRACT IN DIABETES MELLITUS PATIENTS: A STUDY ON PERIPHERAL BLOOD MONOCYTES

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**Background**: Diabetes mellitus (DM) is associated with chronic inflammatory reactions that can be detrimental to endothelial cells. Black cumin and temulawak have been shown to possess anti-inflammatory properties. A nanoparticle formulation containing Temulawak extract and black cumin seed oil has been developed as an anti-inflammatory agent for adjunctive therapy in DM patients. This study aimed to examine the anti-inflammatory activity of the nanoparticle formulation containing black cumin seed oil and Temulawak extract (NP-MTL) in DM patients. **Methods**: This study employed an experimental laboratory design using flow cytometry. Peripheral blood mononuclear cells (PBMCs) were isolated from the venous blood of DM patients. Monocytes were cultured in plates and induced with NP-MTL. Nfkb expression was measured using PE-conjugated mAb and analyzed by flow cytometry. Nfkb expression was calculated as a percentage of expression. Data were analyzed using univariate and bivariate analyses.**Results:** The results showed that NP-MTL significantly suppressed Nfkb expression in PBMCs from DM patients. Nfkb expression was highest in the media control group, followed by the 1st concentration group, and lowest in the 2nd concentration group. Nfkb expression in both concentration groups was lower than in the media control group and was statistically significant ($p<0.05$).**Discussion:** Based on the results, NP-MTL shows potential as an anti-inflammatory agent in DM patients by suppressing Nfkb expression. These findings are consistent with previous studies, which showed that curcumin can inhibit NF-κB activation by inhibiting the phosphorylation and degradation of the NF-κB inhibitor (IκB). This results in NF-κB remaining in its inactive form and unable to translocate to the nucleus. Molecular docking results show that curcumin can interact with the p65 subunit of NF-κB through hydrogen bonding and hydrophobic interactions. Molecular dynamics simulation: This method is used to study the behavior of curcumin and NF-κB protein over a longer time scale. The results of molecular dynamics simulation show that curcumin can bind to the p65 subunit of NF-κB and inhibit NF-κB activation. Thymoquinone can also inhibit the expression of NF-κB target genes, such as COX-2, iNOS, and TNF-α, which are associated with inflammation. The analysis of the interaction between thymoquinone and NF-κB protein shows that thymoquinone can interact with the p65 subunit of NF-κB through hydrogen bonding and hydrophobic interactions. This interaction can inhibit NF-κB activation and reduce the expression of inflammation-related genes. Further preclinical in vivo studies using DM animal models can be conducted to explore its therapeutic potential.

Abstract

# PO-08 HALAL EMULGEL PREPARATIONS FROM ESSENTIAL OIL OF KAFFIR ORANGE PEEL (*Citrus hystrix*) AS ANTIACNE

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Background: Kaffir lime (*Citrus hystrix*) is a plant that is widely known for its many uses, one of which is as an antibacterial. Kaffir lime peel contains β-pinene, citronellal, limonene, and terpinene-4-ol components that can work as antibacterials. Objective: This study aims to determine the verification of kaffir lime peel essential oil, formulation, and evaluation of emulgel preparations as anti-acne. Methods: This research method is experimental research. Emulgel contains kaffir lime peel essential oil at 8% concentration. Evaluation of emulgel includes organoleptic, homogeneity, pH, spread diameter, adhesion time, viscosity, and minimum content test. Results: The emulgel showed a pale yellow, almost colorless organoleptic color with a pH ranging from 7.94 ± 0.05312 and a distinctive aroma of kaffir lime, an adhesion time of more than 1 second, a spread diameter of 5.37 cm ± 0.79, and a viscosity of 28,016.52 ± 3,882.83. Discussion: Kaffir lime peel essential oil emulgel formulation has good physical properties on organoleptic examination, homogeneity, and viscosity, produces preparations with good spreadability and adhesion time, meets the minimum content requirements for topical preparations, and meets the requirements on pH that follow the pH of human skin.

Keywords: emulgel; citrus hystrix; formulation; verification; evaluation

Abstract

# PO-09 HOW DOES PERIPHERAL VENOUS CATHETER-RELATED ADVERSE EVENTS IMPACT THE LENGTH OF STAY FOR A PATIENT: EVALUATE THE INFLUENCE OF RISK FACTORS ON RATES?

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Introduction:Health Care Associated Infections are infections that occur in patients during hospitalization where when they enter there is no infection and are not in the incubation period. One of the Health Care Associated Infections is phlebitis. We report a case that phlebitis impacts the length of stay for a patient. This case shows that HAIs surveillance activities are important in infection prevention and control programs. Good and correct surveillance activities are useful for controlling and handling effectively and efficiently cases related to infections and improving the well-being of patients. Cases Presentation: A 60-year-old man was admitted to the hospital with a fourth allograft cranioplasty surgery plan due to a skull defect of the right FP bones. On the fifth day of postoperative care, the patient had a fever and complained of a hot right thigh, diagnosed with phlebitis and femoral abscess, then incision and drainage debridement were performed. The results of the wound bed culture examination showed the growth of Serratia marcescens, which showed multi-drug resistant and the antibiotic used Ceftriaxone was classified as resistant. Due to complications of phlebitis, the length of stay in the hospital was extended to 10 days. Discussion:Phlebitis is an inflammation of the veins. This inflammation occurs due to disruption of the flow of veins due to damage to the walls of the veins or due to blood clots due to blood clotting. Phlebitis is characterized by swelling, redness along the vein, pain, increased temperature of the cannula insertion area, hardening, erythema, which appears for at least 3x24 hours. Phlebitis can occur due to the installation of a catheter in the veins or also due to chemical irritation of addictive substances and drugs given intravenously. Phlebitis generally occurs on the lower legs and arms. Conclusion:The patient experienced phlebitis during treatment. The occurrence of phlebitis in this patient is possible chemically due to the administration of therapy, namely concentrated electrolytes or parenteral therapy or antibiotic therapy. Efforts to prevent phlebitis include the principle of asepsis during installation, post-insertion of the peripheral venous catheter is closed with an alcohol swab and transparent dressing.

Keywords : Case series; Health Care Associated Infections, phlebitis; the length of stay

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| Scientific committee | : | apt. Syarifatul Mufidah, M.Sc., Ph.D.<br>apt. Nuri Ari Efiana, M.Sc. Ph.D<br>Dr. rer. nat. apt. Sri Mulyaningsih, M.Si.<br>Dr. apt. Woro Supadmi, M.Sc.<br>Mustofa Ahda, M.Sc. Ph.D<br>dr. Leonny Dwi Rizkita, M.Biomed.<br>dr. Tira Alfiani Laariya, M.P.H.<br>dr. Rachma Greta Perdana Putri, M. Biomed<br>Dr. rer. nat. Isom Hilmi, S.Si., M. Biotech.<br>apt. Lalu Muhammad Irham M.Farm., Ph.D.<br>Dr. Rochana Ruliyandari, S.E., M.Kes.<br>Ns. Nurul Kodriati, S.Kep., M.Med.Sc., Ph.D.<br>Dedik Sulistiawan, S.K.M., M.P.H.<br>Desi Nurfita, S.K.M., M.Kes. |

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| | | Dr. Widodo Hariyono, S.T., M.Kes.<br>Musfirah, S.Si., M.Kes.<br>Muhammad Ridwan Ansari, S.Gz., M.Gizi |
| Public Relations and Promotion Department | : | apt. Dr. Adnan, M.Sc.<br>Mustika Cahya Nirmala Dewinta, S.Gz., M.P.H.<br>dr. Andika Ilham Rahmatullah, Sp.B |
| Documentation Department | : | Mauludin Majid<br>Musfika |
| Consumption Department | : | Ratnasari Muliyaningsih, S.E. |
| Equipment Department | : | Rahmat Ernawanto |

## Profile of Faculty

### 1. Faculty of Pharmacy, Universitas Ahmad Dahlan

Faculty of Pharmacy at Universitas Ahmad Dahlan (UAD) is a leading institution in pharmaceutical education and research in Indonesia. Committed to excellence, innovation, and community service, the faculty plays a vital role in advancing pharmaceutical sciences and healthcare through academic programs, research, and industry collaborations.

Academic Programs:

- Bachelor of Pharmacy (S.Farm) – A 4-year undergraduate program preparing students for careers in pharmacy.
- Professional Pharmacist Program (Apt.) – A post-bachelor program for pharmacist certification.
- Master of Pharmacy (M.Farm) – Advanced studies in pharmaceutical sciences, including natural product and clinical pharmacy.
- Doctoral program of Pharmacy (Dr.) – Advanced studies in pharmaceutical sciences, including natural product and clinical pharmacy.

🌐 Official Website: https://ffarmasi.uad.ac.id

✉ Email: farmasi@uad.ac.id

📍 Address: Kampus 3 UAD, Jl. Jl. Prof. DR. Soepomo Sh, Warungboto, Kec. Umbulharjo, Kota Yogyakarta, Daerah Istimewa Yogyakarta 55164.

### 2. Faculty of Public Health, Universitas Ahmad Dahlan

Faculty of Public Health at Universitas Ahmad Dahlan (UAD) is a leading institution in public health education, research, and community service in Indonesia. Established with a commitment to improving population health, FKM UAD integrates academic excellence, evidence-based research, and real-world health interventions to address national and global public health challenges.

Academic Programs

- Bachelor of Public Health (S.KM): Epidemiology & Disease Control, Health Promotion & Behavioral Science, Environmental Health, Occupational Health & Safety, Health Policy & Administration.
- Master of Public Health (M.KM): Advanced studies in epidemiology, health policy, and global health.

🌐 Official Website: https://fkm.uad.ac.id

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### 3. Faculty of Medicine, Universitas Ahmad Dahlan

Faculty of Medicine at Universitas Ahmad Dahlan (UAD) is a premier medical education institution committed to producing competent, ethical, and socially responsible physicians. Established with a strong foundation in Islamic values, FK UAD integrates cutting-edge medical education, research, and community service to address Indonesia's healthcare challenges.

Academic Programs:

- Bachelor of Medicine (S.Ked): Comprehensive medical training with a focus on clinical skills and patient care. Early clinical exposure and problem-based learning (PBL) curriculum.
- Professional Doctor Program (dr.): Prepares graduates for medical practice with hands-on clinical rotations. Emphasis on ethical medical practice and holistic patient care.

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