CONFERENCE PROGRAM AND ABSTRACT BOOK

YEAR

2023

INTERNATIONAL CONFERENCE ON CONTEMPORARY SCIENCE AND CLINICAL PHARMACY (ICCSCP) 2023

Faculty of Pharmacy, Universitas Andalas, Kampus UNAND, Limau Manis, Padang, West Sumetera, Indonesia

iccscp.ffarmasi.unand.ac.id

TABLE OF CONTENTS

WELCOME MESSAGE FROM THE ORGANIZING COMMITTEE

Bismillahirrohmanirrahim

Distinguished Speakers and Participants

Assalamualaikum Wr. Wb.

I would like to take this opportunity to extend a warm welcome to all the participants attending this conference. First, let us begin by thanking the Almighty God for His blessings, grace, and mercies that have enabled us to gather here in good health and excellent condition today.

Ladies and gentlemen

In Indonesia, specific regulations guarantee halal certification for various products. The law that outlines these requirements is Law No. 33 of 2014. The Minister of Religion of the Republic of Indonesia's Decision No. 982 of 2019 sets the standards for Halal Certification Services. This law mandates that food and beverage items, cosmetics, medicines, genetically engineered products, biological products, chemical products, and consumer goods used or exploited by the public must be halal-certified. Pharmacists who possess medical knowledge are responsible for raising public awareness about the halalness of pharmaceutical products. They must also provide information about the legitimacy of halal certification for food products, cosmetics, and medicines to guarantee Muslim life and ensure peace of mind for those who use halal products.

The Faculty of Pharmacy, Universitas Andalas, is hosting an international seminar called "INTERNATIONAL CONFERENCE ON CONTEMPORARY SCIENCE AND CLINICAL PHARMACY 2023." The conference aims to increase the knowledge related to pharmaceutical science, including the aspects of drug discovery, development, and pharmaceutical services. It will also focus on halal guarantees and processes. Therefore, the seminar theme is "*An Integrative Discovery, Development and Awareness of Halal and Healthy Pharmaceutical, Cosmetics, Food Products and Care*." This seminar has been an annual event since 2011 and is attended by academics, government officials, practitioners, students, and industry players.

The international seminar was attended by more than 130 presenters from five countries. We are grateful to all keynote speakers and invited presenters for joining us today to share advanced knowledge and expertise in this scientific event. We would also like to thank the International Journal of Applied Pharmaceutics (IJAP) and Jurnal Sains dan Farmasi Klinik (JSFK) for collaborating in this international seminar. Furthermore, we also thank Persatuan

Saintis Farmasi Indonesia for their role as an external reviewer. We thank the Rector of Universitas Andalas for their collaboration in this conference.

Additionally, we express our deep appreciation to the members of the Organizing Committee for their excellent teamwork and great effort in bringing success to this conference. Lastly, on behalf of the conference committee, we are sorry for any unexpected inconveniences you might have had during this two-day conference. Finally, we hope all participants enjoyed the conference and gained valuable knowledge.

Thank you very much

apt. Suryati MSc., Ph.D

Chairperson ICCSCP 2023

WELCOME MESSAGE FROM THE DEAN OF THE FACULTY OF PHARMACY UNIVERSITAS ANDALAS

Bismillahirrohmanirrahim

Assalamualaikum Wr. Wb.

In the name of the Almighty Allah and His Prophet, who imparted to us the lesson of life's purpose, I want to warmly greet everyone attending the International Conference on Contemporary Science and Clinical Pharmacy (ICCSCP) 2023, hosted by The Faculty of Pharmacy Universitas Andalas. The first ICCSCP was held in 2018, followed by virtual conferences in 2021 and 2022. This year, we are proud to present the fourth ICCSCP, which will also occur virtually. The theme of this international conference is **"An Integrative Discovery, Development and Awareness of Halal and Healthy Pharmaceutical, Cosmetics, Food Products and Care."**

Ladies and gentlemen,

Recently, a significant global movement has arisen to make better and more ethical choices about various aspects of life, including food, medicine, cosmetics, and personal hygiene. This movement has brought about essential changes in industries where health-conscious consumerism intersects with the need for products that adhere to religious values, especially the Halal concept. The Halal idea represents more than just adhering to religious doctrine; it embodies a commitment to morality and well-being. Products that receive Halal certification must adhere to strict requirements, ensuring they are of the highest quality and safe to consume. Consequently, integrating Halal values with health and wellness considerations creates a distinct and compelling niche in the market.

Given the current circumstances, it is urgent to investigate the complex relationship between Halal principles and various industries, including personal care, cosmetics, food products, and pharmaceuticals. Halal has evolved into a comprehensive paradigm prioritizing ethical sourcing, product quality, and safety beyond its religious associations. Our conference aims to explore the relationship between Halal principles and the pursuit of well-being, shedding light on the creative moves and thoughtful decisions that define these sectors. Keynote and invited speakers from Thailand, Malaysia, Japan, Brunei Darussalam, and Indonesia will be at ICCSCP 2023 on October 30-31, 2023. The presenters will discuss the latest developments in clinical pharmacy, pharmacology, pharmacoeconomics, natural products, and pharmacy regulations.

Over the next two days, we will be immersed in a whirlwind of discussions, presentations, and dialogues that promise to push the boundaries of our understanding. The insights gained, the

connections made, and the ideas shared within these walls will leave a lasting impact on our respective fields and the world at large.

I would like to give a brief overview of our organization to our esteemed guests and participants. The Department of Pharmacy, Faculty of Mathematics and Natural Sciences, has a long history and played a crucial role in establishing the Faculty of Pharmacy in 1964. In 2008, the Pharmacy Department was renamed the Pharmacy Faculty. The Master of Pharmacy Program started in 2002, while the Doctorate Program in Pharmacy began accepting students in 2019. Our Undergraduate, Pharmacist Professional, and Master's programs have all received excellent national accreditation, and the Doctoral program has received excellent accreditation. In 2020, the Pharmacy Undergraduate Program was recognized by the ASEAN University Network-Quality Assurance (AUN-QA). Our goal is to conduct research on medication development using natural materials, drug use, and drug safety in clinical practice and the community. We also collaborate with hospitals, government agencies, pharmaceutical companies, universities in Indonesia and abroad, and other organizations to enhance research, education, and community service initiatives. This year, on September 21, we celebrated the 59th anniversary of the establishment of Universitas Andalas' Faculty of Pharmacy, and this meeting is being held in honour of this occasion.

On behalf of the Faculty of Pharmacy at Universitas Andalas, I would like to express my gratitude to the speakers and participants of the ICCSCP 2023. I thank the committee for their hard work organizing this conference. Lastly, I want to acknowledge the Rector of Universitas Andalas for supporting this event.

May God bless us all.

Prof. apt. Fatma Sri Wahyuni, Ph.D.

Dean of Faculty of Pharmacy, Universitas Andalas

KEYNOTE SPEAKERS

DR. IR. H. AUDY JOINALDY, S.PT., M.SC., M.M., IPM, ASEAN.ENG

Deputy Governor, West Sumatra Province, Indonesia

www.audyjoinaldy.com
@joinaldy

AREA OF EXPERTISE

- *Regulation*
- *Politics*
- *Business*

WORK EXPERIENCE

- *Deputy Governor, West Sumatra Province, Indonesia, 2021-present*
- *Lecturer at Bogor Agricultural Institute and Gadjah Mada University*
- *Chairman of Perbakin, West Sumatra*
- *Chairman of LPTQ, West Sumatra*
- *Commissioners and Directors of several companies in Indonesia*
- *Chairman of the Advisory Board of the Indonesian Doctoral Friendship Forum (FORSILADI) West Sumatra*

EDUCATION HISTORY

- *Bachelor of Animal Science from Bogor Agricultural University, 2005.*
- *Master of Science from Wageningen University, Netherlands, 2007.*
- *Master of Management from Hasanuddin University, Makassar, 2011.*
- *Engineering (Ir.) degree from Gadjah Mada University, 2019.*
- *Madya Profesional Engineer from the Indonesian Engineers Association, 2019*
- *ASEAN Engineering (ASEAN.Eng) from the ASEAN Federation Engineering Association (AFEO), 2009*
- *Doctoral studies at the School of Business, Bogor Agricultural University, 2021.*
- *Master of Political Science at Andalas University, 2021-present.*

AWARDS

- *Indonesian World Records Museum (MURI), Deputy Governor with the Most Academic Degrees*
- *The youngest Deputy Governor of West Sumatra in history, appointed by the President of the Republic of Indonesia*

ASSOC. PROF. DR. WINAI DAHLAN

Founding Director of The Halal Science Center, Chulalongkorn University, Thailand

winai.hsc@gmail.com
+66 081 871 3135

AREA OF EXPERTISE

- *Halal Science and Analysis*
- *Halal Industry*
- *Halal Product*

WORK EXPERIENCE

- *Founding Director, The Halal Science Center, Chulalongkorn University, 2004-present*
- *Lecturer, Chulalongkorn University, 1993-present*
- *Vice President, The Central Islamic Council of Thailand (CICOT), 2013-present*
- *Chairman, The Halal Standard Institute of Thailand (HSIT), 2014-present*
- *Member, Thailand Halal Task Force (Ministry of Agriculture and Cooperatives), 2022 - present*
- *Member, Committee of Muslim-friendly tourism promotion (Ministry of Tourism and Sports), 2022 - present*

EDUCATION HISTORY

- *B.Sc. Biochemistry, Faculty of Science, Chulalongkorn University, Bangkok, Thailand, 1976*
- *M.S. Nutrition, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand, 1982*
- *Ph.D. Applied Medical Biology (grand distinction), Faculty of Medicine and Pharmacy, St-Pierre Hospital, Université Libre de Bruxelles, Brussels, Belgium, 1989*

AWARDS

Awards

- *The Award for The Continuous International Affirmation of Halal in The World from Agency for Halal Quality Certification, Sarajevo, Bosnia and Herzegovina, 2023*
- *The Public Sector Excellence Award (for E-Number), Office of Public Sector Development Commission, Office of Prime Minister, Bangkok, Thailand, 2020*
- *The Dushdi Mala Medal , 2008*

Honours

- *One of The 500 World's Most Influential Muslims for 14 consecutive years by the Royal Islamic Strategic Studies Centre.*

PROF. DR. IRWANDI JASWIR, M.SC

International Institute for Halal Research and Training (INHART), International Islamic University Malaysia

irwandi@iium.edu.my
+60 17 2040 456

AREA OF EXPERTISE

- *Food Chemistry and Biochemistry*
- *Halal Science and Authentication*
- *Food Quality and Safety*

WORK EXPERIENCE

- *Chairman, Korea-Inhart Halal Certification Authority*
- *Consultant, Halal Centre, Saudi Food and Drugs Authority (SFDA),Kingdom of Saudi Arabia*
- *Senior Consultant of Food Safety, Pure and Good Ltd, Singapore*
- *Consultant, Aladdin Group (Halal E-Commerce) Sdn Bhd. Kuala Lumpur, Malaysia*
- *Board Member, Haebara Pte Ltd (Halal Poultry), South Korea*
- *Board Member, Skinmatch Sdn Bhd (Halal Cosmetics), Kuala Lumpur*

EDUCATION HISTORY

- *Bachelor Degree (with honours) in Food Technology and Human Nutrition, Bogor Agriculture University, Indonesia, 1993*
- *Master of Science (M.Sc.) in Food Science and Biotechnology, Universiti Pertanian Malaysia, 1996*
- *Philosophy of Doctor (Ph.D) in Food Chemistry and Biochemistry, Universiti Putra Malaysia, 2000*
- *Ph.D Exchange Programme, Dept. of Food, Nutrition and Health, University of British Columbia, Canada, 1989*
- *Diploma in Islamic Revealed Knowledge, International Islamic University Malaysia. 2003*
- *Postdoctoral Fellowship in Lipid Biochemistry, National Food Research Institute, Tsukuba, Japan, 2006-2008*

AWARDS

- *King Faisal International Prize Laureate 2018 ('Nobel Prize of Muslim World')·*
- *Indonesian Institutefor Science (LIPI) Award 2019*
- *Habibie Award 2013 Recipientin Medicine and Biotechnology*
- *Islamic Product Innovation Award, 2016 & 2017*
- *Asia Pacific Young Scientist Award by Scopus in 2010*
- *Kedaireka Matching Fund Awardee, Kemdikbud Ristek, 2021*

PROF. DR. APT ERIZAL ZAINI, M.SI

Department Of Pharmaceutics, Faculty Of Pharmacy, Universitas Andalas, Indonesia

erizal.ffua@gmail.com

+6281395029297

AREA OF EXPERTISE

- ***Pharmaceutical Technology***
- ***Solid State Pharmaceuticals***

WORK EXPERIENCE

- *Head of Pharmacy Doctoral Program, Faculty of Pharmacy, Andalas University*
- *Deputy Dean of the Faculty of Pharmacy, Andalas University*
- *Editor in Chief of Jurnal Sains Farmasi dan Klinis (JSFK)*
- *Editorial board of several national journals*

EDUCATION HISTORY

- *Bachelor degree, Pharmacy, Andalas University, 1997*
- *Master degree, Pharmaceutics, Bandung Institute of Technology, 2002*
- *Doctoral degree, Pharmaceutics, Bandung Institute of Technology, 2010*

REVIEWER/ASSESSOR EXPERIENCE

- *Reviewer of the Student Creativity Program by the Ministry of Education and Culture, Republic of Indonesia.*
- *Reviewer for research by the Ministry of Education and Culture, Republic of Indonesia*
- *Reviewer of several national and reputable international journals: Carbohydrate Polymer (Elsevier), Drug Development Industrial Pharmacy (Taylor Francis Group), ACS Omega (ACS Publications), Sains Malaysiana (UKM Malaysia), Indonesian Journal of Chemistry (UGM)*
- *National assessor of scientific journals*

PROF. HIROSHI KANZAKI, PH.D

Faculty of Graduate School of Environmental, Life, Natural Science & Technology, Okayama University, Japan

hkanzaki@okayama-u.ac.jp
+81-86-251-8297

AREA OF EXPERTISE

- ***Enzyme Production***
- ***Applied Biochemistry***
- ***Fermentation***

WORK EXPERIENCE

- *Executive director (Vice President for International affairs), Okayama University, 2017 – 2018*
- *Dean, The Graduate School of Environmental & Life Science, Okayama University,*
- *President in of Okayama University Library, 2011-2013*
- *Dean, Faculty of Agriculture, Okayama University, 2007-2011*
- *Vice dean, Faculty of Agriculture, Okayama University, 2005-2007*

EDUCATION HISTORY

- *Faculty of Agriculture, Kyoto University, Awarded the degree of Bachelor of Agriculture*
- *Faculty of Agriculture, Kyoto University, Awarded the degree of Master of Agriculture*
- *Faculty of Agriculture, Kyoto University, Awarded the degree of Doctor of Agriculture*

RESEARCH EXPERIENCE

- *Professor, Okayama University working on 'search and production of useful bioactive compounds using cells or enzymes' , 2004-present*
- *Associate professor, Okayama University working on 'search and production of useful bioactive compounds using cells or enzymes' , 1993-2004*
- *Visiting Scientist in National Institute of Health, USA working on enzymology of tryptophan synthase, 1988-1989*
- *Assistant Professor working on 'search and production of useful bioactive compounds using cells or enzymes' , 1987-1993*
- *JSPS postdoctoral fellow at Faculty of Agriculture, Kyoto University, working with Professor Hideaki Yamada on 'enzymatic synthesis of useful compounds' , 1986-1987*

ASSOC. PROF. DR MOOHAMAD ROPANING SULONG

Halalan Thayyiban Research Centre (HTRC), Universiti Islam Sultan Sharif Ali (Unissa), Brunei Darussalam

ropaning.sulong@unissa.edu.bn

+673 7254269

AREA OF EXPERTISE

- *Enzyme Modification and Protein Engineering*
- *Microbial Biotechnology*
- *Molecular Biology*
- *Halal Sciences*

WORK EXPERIENCE

- *Associate Professor in Science and Halal Science at Halalan Thayyiban Research Centre, Universiti Islam Sultan Sharif Ali (Unissa), March 2023-present*
- *Director of Centre for Research and Industrial Linkages (CRIL), Universiti Selangor, Malaysia, 2020-2023*
- *Director of International Halal Institute (INSHA), Centre of Excellence, Universiti Selangor, Malaysia, 2018-2023*
- *University Representative, Malaysian Society for Biochemistry and Molecular Biology (MSBMB), 2020-2023*
- *Selangor Halal Industry Committee Member under Exco for Islamic Affairs, Consumers and Halal Industry, 2020-2023*
- *Internal Auditor (ISO 9001:2015 & 21001:2018 EOMS), Universiti Selangor, Malaysia, 2021-2023*

EDUCATION HISTORY

- *BSc. Microbiology in Al Azhar University, Cairo, Egypt, 1995*
- *MSc. Microbial Biotechnology in Universiti Putra Malaysia, Malaysia, 2006*
- *PhD. Enzyme Technology in Universiti Putra Malaysia, Malaysia, 2015*

AWARDS

- *Invention, Innovation & Design Exposition (Silver award), 2020*
- *Intellectual Research & Innovation Showcase (Bronze award), 2019*
- *Finalist at Tech Plan Demo Day in Malaysia, 2019*
- *Universiti Selangor Award as Excellent Researcher, 2018*
- *Best Oral Presenter at Thailand Halal Assembly, 2016*
- *Best Oral Presenter at Compendium of Unisel & Research Publications, 2012*
- *Al-Biruni Academic 2005 Award*

PROF. DR. APT. ABDUL ROHMAN, SF, M.SI

Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Gadjah Mada University, Indonesia.

abdul_kimfar@ugm.ac.id

+622746492565

AREA OF EXPERTISE

- *Analysis of Halal Products*
- *Authentication*
- *Analytical Chemistry*

WORK EXPERIENCE

- *Head of Center of Excellence, Institute of Halal Industry and Systems, Universitas Gadjah Mada.*
- *Lecturer in Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Universitas Gadjah Mada Yogyakarta*
- *Editor in Chief Indonesian Journal of Pharmacy (Q3-Scopus Indexed Journal)*
- *Guest editors and reviewers in several reputed journals.*

EDUCATION HISTORY

- *Bachelor degree at Pharmaceutical Sciences, Faculty of Pharmacy, Gadjah Mada University, Indonesia, 1998-2002*
- *Master degree at Pharmaceutical Sciences, Faculty of Pharmacy, Gadjah Mada University, Indonesia, 2004-2006*
- *Ph.D degree from Institute of Halal Product Reseach, Universiti Putra Malaysia, 2011*

AWARDS

- *Young Scientist Scopus Award on Sustainable Agriculture in 2014*
- *“Anugerah Kekayaan Intelektual Luar Biasa or AKIL” in the field of international publication from the Ministry of Research, Technology and Higher Education year 2014.*

DR. MUHAMMAD AQIL IRHAM, M.SI

Head of the Halal Product Assurance Organizing Agency (BPJPH) of the Ministry of Religious Affairs, Republic of Indonesia

aqil.irham@gmail.com
+62 811 7201 969

AREA OF EXPERTISE

- ***Halal System and Regulatory***
- ***Halal Product Assurance and Certification***
- ***Digitization***

WORK EXPERIENCE

- *Head of the Halal Product Assurance Organizing Agency (BPJPH) of the Ministry of Religious Affairs, Republic of Indonesia, 2021-present*
- *Deputy Secretary-General of Nahdlatul Ulama Central Board, 2015 - 2020*
- *Secretary-General of Gerakan Pemuda Ansor, 2011 - 2016*
- *Chairman of IMT GT HAPAS, 2023-present*
- *Speaker at The Embassy of the Republic of Indonesia in Tokyo about Mandatory Halal in Indonesian Regulations, 2023*
- *Chair Working Group on Halal Product Services (WGHAPAS) Startegic Planning Meeting IMT-GT- Thailand, 2023*
- *Speaker at the Speaker 2nd Indonesia Syariah Awards, 2022*
- *Speaker at Malaysia-Indonesia Halal Forum and Industry Engagement, 2023*

EDUCATION HISTORY

- *Bachelor degree in Aqidah and Islamic Philosophy, IAIN Raden Intan, Indonesia, 1992*
- *Master degree in Sociology, University of Indonesia, 2000*
- *Doctoral degree in Sociology, University of Indonesia, 2015*

AWARDS

- *First Best Central Echelon 1 Unit by Minister of Religious Affairs , 2023*
- *20 Years of Loyal Service by President of the Republic of Indonesia, 2018*
- *Certificate of Merit as a Civic Education Lecturer by ICCE-IAIN Syahida Jakarta, 2001*

KEYNOTE SPEAKER'S ABSTRACT

Interconnecting Halal and Healthy Products with Halal Tourism in West Sumatra

Audy Joinaldy

Deputy Governor, West Sumatra Province, Indonesia

ABSTRACT

This paper explores the relationship between Halal and healthy products and their role in promoting Halal tourism in West Sumatra, Indonesia. The region's rich cultural heritage, diverse cuisine, and commitment to providing Halal and healthy products offer promising economic growth, cultural preservation, and sustainable development opportunities. These aspects potrays the potential benefits of Halal tourism in West Sumatra, including increased revenue, cultural preservation, and enhanced community well-being.

Nevertheless, the pursuit of these opportunities does not come without its own set of challenges. Infrastructure development, educational initiatives, and collaborations between related institutions are key hurdles that must be addressed to fully capitalize on the potential of Halal tourism in the region.

By investing in Halal certification, enhancing infrastructure, and implementing educational programs to raise awareness among both tourists and local businesses, West Sumatra can firmly establish itself as a premier Halal tourism destination, reaping the economic, cultural, and social benefits it has to offer. This paper serves as an insight for policymakers, businesses, and scholars interested in the symbiotic relationship between Halal and healthy products and Halal tourism in West Sumatra.

Keywords: Halal Tourism, Halal Product, Health and Care Product, Integrative Approach

The Establishment of Innovative 'HAL-Q Plus' Halal Standardization System for Manufacturing Halal-Trusted Food, Cosmetics & Pharmaceutical Products

Winai Dahlan[1]*

Pornpimol Mahamad[1], Anat Denyingyhot[1], Najwa Yanya Santiworakun[1], Acharee Suksuwan[1], Nureesun Mahamud[1], Erfun Waehama[1], Vanida Nopponpunth[1], Monruedee Khemtham[1], Nifarid Radenahmad[2], Pitak Ardmareh[2], Pradorn Sureephong[3], Kasinee Katelakha[4].

[1]The Halal Science Center (HSC), Chulalongkorn University, Bangkok, Thailand.
[2]The Halal Science Center (HSC), Pattani.
[3]The Halal Science Center (HSC), Chiangmai.
[4]The Halal Science Center (HSC), Nakhon Nayok.
**E-mail: winai.hsc@gmail.com*

ABSTRACT

Sophistication of food/cosmetic/pharmaceutical (FCP) industries facilitate the intrusion of many hidden haram elements into FCP products, the Halal standardization system for Haram elimination and quarantine (HrEQ) is thus essential. The Halal Science Center Chulalongkorn University (HSC), Thailand developed an innovative well-rounded Halal standardization system namely 'HAL- Q Plus' by seemlessly incorporating 4 back-to-back HrEQ steps including: 1) Setting up the Haram Critical Control Point (HrCCP) surveillance system; 2) Utilization of innovative Halal chemical database namely 'H-number' analyzed and tabulated of accumulated data obtained from scientific haram laboratory screening of 188,361 FCP samples collected throughout 15 years of work; 3) Hidden Haram screening with innovative serie of 4 scientific laboratory techniques in case of essential; 4) Application of innovative Shariah-based haram/najis purging clay-colloidal liquid namely 'HalKlean' developed under the supervision of Fatwa Council of Sheikh-al Islam. HAL-Q Plus has been implemented in 1,112 FCP manufacturers countrywide covering 158,823 workers. Subsequently, each 4 HrEQ steps are then digitally locked with Non-Fungible Token (NFT) for development of 'Thailand Diamond Halal Blockchain 4.0' IT platform in accordance with the Cabinet Resolution on Sep 10, 2019. An establishment of Halal-trusted FCP products from the above-mentioned system is thus speculated. Eventually, an increment of the commercial competitiveness by remarked budget reduction achieved by this establishment in comparison to conventional Halal manufacturing way or even old HAL-Q system should also be noted.

Keywords: HAL-Q, Halal Standardization, Blockchain, Haram Laboratory Analyses, Digital Technology, Halal Trust.

Food Security and Future Technology Enablers for Halal Traceability

Irwandi Jaswir

International Institute for Halal Research and Training (INHART), International Islamic University Malaysia
Email: irwandi@iium.edu.my

ABSTRACT

Food security, as defined by the United Nations' Committee on World Food Security, means that all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life. Food insecurity exists when people do not have adequate physical, social or economic access to food as defined above.

Delivering future resilient and sustainable food systems must include acknowledgement at policy levels of all areas of government that food science and technology must be incorporated into education leading to capacity building, food and nutrition, research and development that impact regulatory, social and economic facets of government, and partnerships in every sector including the empowerment of women. General acknowledgment that health and wellbeing of a population and a healthy diet are not based on nutrition alone but also on the transformation of the food systems to be sustainable and resilient which requires the expertise of food scientists, technologists and engineers who are involved from farm to the consumer.

The advancement of Science and Technology for the development of the food for future, however, creates great concern and awareness on the issue of the halal traceability. Traceability as defined by ISO 9000 (2005) standards is “the ability to trace the history, application or location of that which is under consideration”. Traceability may refer to the origin of materials and parts, the processing history, and the distribution and location of the product after delivery as further defined by the ISO guidelines.

Halal traceability is crucial in ensuring the integrity and sanctity of product and services that are produced are not only certified as halal or permissible by a credible internationally recognised certification body but also safeguard the fatwa (an official statement from the religious leader) passed by the committee of Halal advisors on issues related to Halal and Haram for products or services put forward by the parties concern or by consumers who are doubtful of the halalness of the product and services that are available in the market.

Crystal Engineering of Active Pharmaceutical Ingredients to Improve Solubility and Dissolution Rate

Erizal Zaini

Department of Pharmaceutics, Faculty of Pharmacy, Universitas Andalas Padang, West Sumatera, Indonesia
Email: erizal.ffua@gmail.com

ABSTRACT

In general, active pharmaceutical ingredients (API) and excipients are formulated into pharmaceutical dosage forms in the form of liquid preparations, semisolid preparations, and solid preparations, which aim to facilitate the delivery of API to patients and increase efficacy. Solid dosage forms administered via the oral route are the most widely available on the market, which is approximately more than 80%, including tablet, capsule, and powder preparations. Solid dosage forms have many advantages, including; being easy for patients to consume, more precise dosage regimens, lower manufacturing costs, better stability (physical, chemical, and microbiological), as well as more practical and simple handling, manufacturing, and packaging processes during the development and production stages. There are three stages passed by solid oral preparations in order to be absorbed in the gastrointestinal tract (GIT) and provide pharmacological activity: 1) release of API from the solid dosage form, 2) dissolution of API in GIT fluids, and 3) permeation (penetration) of dissolved API molecules across the gastro intestinal tract membrane lipids. Dissolution rate and permeation processes are two processes that are the rate-limiting steps in the absorption process. Approximately 40% of API circulating in the market and approximately 70-90% of API candidates being researched and developed into new drug candidates have problems in solubility and dissolution rate (categorized into BCS class II and IV). In general, the low solubility of API in water is a serious problem in developing and designing the quality of oral solid dosage forms in the pharmaceutical industry because it can hinder the effective concentration of API in the systemic circulation. Several strategies have been reported to overcome the solubility and low dissolution rate in water, which are generally divided into three approaches: 1) formulation approach, 2) particle engineering, and 3) crystal engineering. The crystal engineering technique is the design and synthesis of solid API to obtain better physicochemical properties based on intermolecular interactions. Patterns of intra- and intermolecular interactions in solid API crystal packing will significantly affect many physicochemical properties of solid materials, including solubility properties and dissolution rates. The intermolecular interactions involved in crystal engineering are non-covalent interactions such as hydrogen bonds, halogen bonds, van der Waals bonds, and pi-pi interactions, which result in a new crystal structure containing an API and coformers (excipients or another API). This new crystal results from the engineering known as multicomponent crystal phases, classified as cocrystals, solvates, and salts.

Keywords: Crystal Engineering, multicomponent crystal, solubility and dissolution rate.

Microbial Conversion of an Olive Leaf Extract Constituent to Create a Novel Antioxidative Compound B-olivol® as a Cosmetic Material

Hiroshi Kanzaki

Faculty of Environmental, Life, Natural Science & Technology, Okayama University, Japan
Email: hkanzaki@okayama-u.ac.jp

ABSTRACT

Microbe-catalyzed structural conversion is known as a high functionalization method of secondary metabolites. While plant secondary metabolites possess diverse and unique structures and some of them exhibit activities useful for human, a significant number of them are not readily useable due to their limited characteristic.

Olive leaves are known to be rich in secoiridoid secondary metabolite, oleuropein, but there have been no reports of their microbial conversion. We found that baker's yeast treatment of an olive leaf extract resulted in the formation of a novel compound, B-olivol® with potent antioxidant activity. Furthermore, we found that black yeast isolated from olive flowers showed more efficient conversion activity in producing B-olivol® than baker's yeast.

I present the microbial conversion to create B-olivol® and its applications in the cosmetic industry.

Microbial Bioprocess Based-Food Products: from the Perspective of Science and Islamic Shariah

Moohamad Ropaning Sulong, Norkhairiah Hashim

Halalan Thayyiban Research Centre (HTRC), Universiti Islam Sultan Sharif Ali, Bandar Seri Begawa, Negara Brunei Darussalam.
E-mail: ropaning.sulong@unissa.edu.bn

ABSTRACT

Microbial bioprocess-based food products refer to food products that are produced using microorganisms such as bacteria, yeast, or fungi through various bioprocessing techniques. Since bioprocessing involves the use of biological agents such as enzymes, microorganisms, or living cells to produce, transform, or preserve food, hence, issues related to the halalness of the products and their thayyiban aspects, which includes hygiene, quality, and safety, are being concerned by many consumers, particularly the Muslim consumers. This review paper highlights on microbial bioprocess based-food products from both perspectives namely the science and Islamic Shariah. The research findings from this secondary data showed that industrial revolution in the food technology has enabled better food safety measures, including advanced packaging, monitoring systems, and traceability solutions, which align with the Islamic Shariah objective of preserving life (hifz al-nafs). Besides, microbial bioprocesses can be highly efficient in producing food products, often with shorter production times compared to traditional methods. Furthermore, they can be more sustainable as they may require fewer resources like land and water compared to traditional agriculture and allows for the customization of food products, including flavour, texture, and nutritional content. On the other hand, Islamic Shariah provides guidelines for what is considered halal (permissible) and haram (forbidden) in food consumption. It is essential for any food product, including microbial bioprocess-based ones, to adhere to these guidelines. The source of ingredients is crucial; thus, the microbial bioprocess-based foods must be ensured that the microorganisms and raw materials used are derived from halal sources. Islam is not against technology advancement, science can play a role in ensuring the safety, quality, and sustainability of these products, which can be in harmony with Islamic values when produced and consumed with awareness of Islamic ethics. Nonetheless, the production and consumption of microbial bioprocess-based food products must be compatible with the Islamic Shariah principles to adhere to halal requirements, ethical considerations, and provide wholesome and nutritious options.

Keywords: Microbial bioprocess, Food products, Maqasid Shariah, Halal, Sustainability.

The Recent Progress on Halal Authentication Analysis of Food and Pharmaceutical Products

Abdul Rohman

Halal Center, Universitas Gadjah Mada Yogyakarta, Indonesia
Email: abdul_kimfar@ugm.ac.id

ABSTRACT

Indonesia has implementation Indonesian Act Number 33 year 20154 on Halal Products Assurance. All products including food, beverages, cosmetics and pharmaceutical products sold in Indonesia must be halal certified, therefore halal certification in Indonesia is mandatory. Due to some reasons, some non-halal components mainly from pig derivatives and derivates of non-halal animals have been found in these products, therefore the availability of analytical methods capable of detecting non-halal components is very urgent. Some biomarkers present in non-halal components have been explored as the analyte targets using chemical and biological methods. Spectroscopic-based methods including FTIR spectroscopy combined with chemometrics are ideal technique for rapid screening of non-halal components such as lard and other non-halal fats. In addition, chromatographic and molecular biology techniques offer reliable method to confirm the presence of chemical markers such as fatty acids, peptides and metabolites as well as the biological markers such as DNA and protein present in non-halal components. LC-MS/MS is ideal technique for analysis of lipidomics, proteomics and metabolomics of non-halal components, while polymerase chain reaction is standard method for analysis of fingerprinting DNA in the evaluated samples.

Keywords: Porcine gelatine, pharmaceutical products, LC-MS/MS, chemometrics, halal authentication analysis.

Indonesia's Halal Regulation System and Ecosystem: The Development of Halal for Pharmaceuticals Industry in Indonesia

Muhammad Aqil Irham, Subandriyah

Halal Product Assurance Organizing Agency (BPJPH), Ministry of Religious Affairs Republic of Indonesia
Email: aqil.irham@gmail.com

ABSTRACT

The number of halal drug certifications increased significantly in 2019, in line with the implementation of Law No. 33 of 2014 regarding Halal Product Assurance (JPH Law). Subsequently, in 2020 there was a decrease—from 1.891 medicinal products in 2019 to 830 medicinal products in 2020—in line with the issuance of a derivative regulation of the JPH Law namely Government Regulation (PP) No. 39 of 2021 regarding the implementation of the Halal Product Assurance Sector. The new era of Halal Certification in Indonesia is mandatory in refers to Halal Product Assurance Law (UU JPH), handled by the government, in this case the Ministry of Religious Affairs (MoRA) Republic of Indonesia through the Halal Product Assurance Organizing Agency (BPJPH). The aims implementation of Halal Product Assurance are to provide convenience, security, safety, and certainty of the availability of halal products for the public in accordance with consuming and using the product moreover increasing added value for business actors to produce and sell halal products. Products that enter, distribute, and trade in the country of Indonesia must be halal certified (JPH Law No. 33 of 2014: article 3 and article 4). Regarding the obligation to be halal certified for goods and services, the first stage of certification has started from October 17, 2019 to October 17, 2024 for food and beverage products and slaughtered products or services. Meanwhile, for non-food and beverage products, it has been started since October 17, 2021, enclosed with products in the form of drugs, biological products, and medical devices that will be certified as halal must fulfill the requirements of safety, benefit or efficacy, and quality first in accordance with the provisions of laws and regulations. From the year of 2017 to 2023, there are dynamics of halal regulation and its derivatives. On the one hand, halal certification services follow the era of digitalization and integration on halal certification services through the Halal Information System (SIHALAL). The development of SIHALAL is based on integrated electronics and automation of the Halal Certification process using Artificial Intelligence (AI). The purpose of implementing AI in the Halal certification process is to assist the process of verifying and validating submissions automatically. In addition to AI-based automation, SIHALAL is also continuously being developed by implementing a Halal Product traceability system using blockchain.

Keywords: Mandatory, dynamics of halal, digitization.

INVITED SPEAKER'S ABSTRACT

Study on Natural Products from Sumatran Plants; Isolation and Bioactivities

Nova Syafni[1,2]*, Nofrizal[2,3], Friardi Ismed[1,2], Deddi Prima Putra[1,2], Amri Bakhtiar[2,4], Dayar Arbain[2,5]

[1]*Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatra, Indonesia 25163*
[2]*Sumatran Biota Laboratory, Universitas Andalas, Padang, West Sumatra, Indonesia 25163*
[3]*Department of Pharmacy, Dharma Andalas University, Padang, West Sumatra, Indonesia, 25123*
[4]*Departemen of Pharmacy, Faculty of Medicine, Baiturrahmah University, Padang West Sumatra, Indonesia 25886*
[5]*Faculty of Pharmacy, Universitas 17 Agustus 1845, Jakarta, Indonesia 14350*

**Email: novasyafni@phar.unand.ac.id*

ABSTRACT

Natural products are important resources and inspire researchers in drug discovery and development. The lead compounds can be isolated from different species to gain the lead compounds for targeted bioactivities. Sumatran plants research in our group had isolated several compounds and tracked their activities based on the rapid screening in the laboratory and ethnobotany or ethnomedicine. Some studies have been done on isolation alkaloids, phenolics, flavonoids, steroids, and neolignans from Sumatran plants. The bioactivities of each sample were tested against antimicrobial, antioxidant, and several enzymes. The targeted compounds were isolated based on their bioactivity. One of the screening approaches of bioactivity that we have applied is TLC-bioautography. This method can localise the active compounds of the extracts in the TLC plate. Afterwards, the results can guide the isolation process of responsible compounds for the activity. TLC-autography was applied to localise the non-polar compounds to inhibit the α-glucosidase enzyme. The details of working on isolation and screening of bioactivity will be discussed further.

Keywords: Sumatran plants, TLC-bioautography, natural products, isolation, α-glucosidase.

Halality/Halalness Assurance in Drug Discovery Process

Rahmana Emran Kartasasmita

School of Pharmacy, Bandung Institut of Technology, Indonesia

ABSTRACT

Prior its clinical use, safety, efficacy and quality aspects of an active pharmaceutical ingredient (API) should be assured and proven. In addition to those requirements, with the entry force of Act no. 33 of 2014 on Halal Product Assurance/Guarantee, all APIs used for medicine production in Indonesia are legally obligatory to be halal certified. Consequently, during drug discovery process, halality/halalness aspects of a new compound studied should be taken into consideration. In the case of API produced by chemical synthesis, halal condition can be achieved when all reagents and production facilities are also in halal condition, i.e., free of starting materials, solvents, catalyst, etc. originating from porcine, najis sources or its derivative. This condition implies also that all production facilities should be dedicated for production of halal product only. Similar to quality, halality/halalness should also be designed and API producing industry should establish halal assurance system (HAS) and halal control (HC) to ensure that halal condition of the product can be achieved.

Pharmacists' Provision and Challenges of Health Promotion Services Towards Non-Communicable Diseases in Indonesia

Susi Ari Kristina

Department of Pharmaceutics, Faculty of Pharmacy, Universitas Gadjah Mada, Yogyakarta, Indonesia, 55281
Email: susiari_k@ugm.ac.id

ABSTRACT

The World Health Organization (WHO) estimates that noncommunicable diseases (NCDs) cause more than 36 million deaths each year. Interventions that are therapeutically effective and practicable based on local resources are necessary for the prevention and control of NCDs. Interventions must be framed in accordance with national policies and targeted on reducing risk factor.

Pharmacists play a crucial role in preventing and managing NCDs by providing more direct interventions in medication education and disease management, resulting in improved medication adherence. Evidence from numerous studies conducted in Indonesia revealed that pharmacists are a valuable asset in the global fight against NCDs, with their ability to carry out pertinent tasks in the multidisciplinary healthcare team focused on early detection and prevention, as well as maximizing and ensuring adherence to medication therapy regimens.

Building on their crucial roles as primary healthcare providers in the community, pharmacists can offer targeted interventions, specialized counseling and care coordination, and improving patient engagement to achieve better outcomes. NCDs pose one of the greatest emerging healthcare risks for humanity, necessitating innovative and creative solutions.

Keywords: Non-communicable diseases, pharmacists, community, prevention, health promotion, Indonesia.

Muslim Friendly Medical Tourism; Complementary Medicines and Tibbun Nabawy Practices

Betania Kartika

International Institute for Halal Research and Training, International Islamic University Malaysia
Email: betazubaidi@gmail.com

ABSTRACT

The concept of "Muslim-Friendly Complimentary Medical Tourism" represents a multifaceted approach to healthcare and tourism that caters to the specific needs and preferences of Muslim travelers seeking medical treatment abroad, while "Tibbun Nabawi," often referred to as "Prophetic Medicine" or "Islamic Medicine," is a traditional system of medicine that is based on the teachings and practices of the Islamic prophet Muhammad (peace be upon him). It encompasses various remedies, dietary guidelines, and lifestyle practices derived from the Hadith (sayings and actions) of the Prophet Muhammad. This study aims to discover various aspects of Muslim-friendly medical tourism, including both complementary and Tibun Nabawy, from their points of historical roots, holistic approach, natural remedies, dietary guidance, lifestyle recommendations, mind-body connection, etc. The method used is a library research as a primary data collection, by reviewing the previous literatures. It is found that while there are similarities and overlaps between Tibbun Nabawi and complementary medicine, they are distinct systems with their own principles, practices, and cultural contexts. Individuals who seek to incorporate Tibbun Nabawi into their healthcare should do so under the guidance of qualified practitioners who are knowledgeable about both Islamic teachings and medical science, and those who are interested in complementary medicine should consult with healthcare professionals who are experienced in these practices to ensure their safety and effectiveness.

Nanophytosome: A Promising Carrier for Phytocosmeceuticals & Phytopharmaceuticals

Henny Lucida

Departement of Pharmaceutics, Faculty of Pharmacy, Universitas Andalas, Padang Indonesia
Email: hennylucida@phar.unand.ac.id

ABSTRACT

The term nanophytosome has been known in the last 8 years, characterized by the formation of molecular complexes between active ingredient and surfactants-cosurfactants through physical or chemical interaction. Nanophytosomes offer a solution to overcome the poor physicochemical properties of medicinal/cosmetic ingredients such as low solubility, poor permeability and instability. It is a promosing delivery system for herbal extracts or fractions (pure extracts) with encapsulation of phytoconstituents into lipid-based vesicles that provide protection from exposure to oxidants, enzymes and other causes of instability during the process of absorption and distribution to receptors resulting in sufficient levels of active ingredients in blood. The presence of lipid bilayers surrounding the core produces lipophilic carrier which facilitate the transport across cell membrane. These two effects will increase the efficacy of the drug/cosmetic, reduce the effective dose, reduce the possibility of side effects and other undesirable effects and produce cost efficiencies. Furthermore, the development of phytocompound-based nanocosmeceuticals and nanopharmaceuticals is a more rational choice to reduce concerns about systemic toxic effects due to increasing levels of synthetic medicinal/cosmetic ingredients entering the blood after administration.

The weaknesses of nanophytosomes are the tendency for agglomeration to occur due to the cohesive forces between nanometer-sized vesicles, sedimentation during storage, crystal growth and changes in the crystallinity index of medicinal/cosmetic ingredients in vesicles during storage. Therefore, stabilization techniques including electrostatic and steric stabilization are critical parameters that must be considered and controlled during the manufacturing process. Electrostatic and steric stabilization is largely determined by the selection of the surfactant-cosurfactan mixture at compositions that suit the character of the medicinal/cosmetic ingredients used. Therefore, formulation optimization techniques are necessary and characterization of nanophytosome formulations including determination of vesicle size, zeta potential value, polydispersity index, vesicle microscopic profile, drug loading capacity as quality control must be carried out

This article reports the development of nanophytosome formulations containing catechin, quercetine-vitamin C, or red ginger extract for the purpose of transdermal use in cosmetic serums or knee pain medications.

Quality Development of Traditional Herbs, Preparations and Herbal Products: FRIM's Experience

Fadzureena Jamaludin*, Ling Sui Kiong

Natural Products Division, Forest Research Institute Malaysia (FRIM), 52109 Kepong, Selangor
Email: fadzureena@frim.gov.my

ABSTRACT

The intricacies of botanical extracts, the recognition of potential benefits from herbal remedies, and the increasing interest in herbal products pose distinctive challenges that call for innovative approaches. Forest Research Institute of Malaysia (FRIM) aims to support the national bioeconomy agenda by documenting ethnobotanical and traditional knowledge of traditional herbs for sustainable development and benefit sharing of natural resources, generating scientific knowledge for sustainable utilization of natural products in the herbal industries, developing standardized extracts, active ingredients and prototypes of quality, efficay and safe (Q,E,S) cosmeceuticals and nutraceuticals as well as developing protocols and specifications for quality assurance of herbal raw materials, extracts and products. This presentation will share FRIM's experience in some working examples, including practices to consider and challenges encountered that relate to the production of quality traditional herbs, preparations as well and herbal products. These include the process of how to control and evaluate scientifically the quality and consistency of herbal preparation starting from planting materials, raw materials, extracts, and active ingredients up to products. Case studies on the authentication of senduduk that involved three approaches including macroscopy, microscopy and chemical analysis were discussed towards the development of quality herbal material. Standardization on the other hand, also play an important role in the production chain to make sure the quality is consistent in every batch. Additionally, a case study on the bioassay-guided approach for identifying biomarker and developing the standardized extract "GOUTREE" from Baeckea frutescens will also be shared as one of FRIM's experiences in development of quality herbal products. To summarize, FRIM plays a significant role in enhancing the Q,E,S of the whole chain that is involved in Malaysia's herbal industry.

Keywords: Traditional herbs, authentication, quality assurance, standardized extract, senduduk, Baeckea frutescens.

Activity Test of Antibacterial Mesenchymal Stem Cell Secretome Against *Staphylococcus aureus* Isolated from Diabetic Foot Ulcer Patients

Marlina[1]*, Annisa Fauzana[1], Rahmawati Elda1[1], Ikhwan Resmala Sudji[2], Nur Elida[3]

[1]Faculty of Pharmacy, Andalas University, Padang, 25163 West Sumatera, Indonesia
[2]Faculty of Health Science, Perintis Indonesia University, Padang, 25586, West Sumatera, Indonesia
[3]Biomolecular Research Center, Ina Laboratory, Padang, 25152, West Sumatera, Indonesia
**Email: marlina@phar.unand.ac.id*

ABSTRACT

Mesenchymal stem cell (MSC) is a type of stem cell that originates from adult tissue and has various potentials in medicine, especially regenerative medicine and immunomodulation. The MSC secretome, as an MSC derivative derived from culture media, has extraordinary potential in clinical testing, one of which is as an antibacterial. *S. aureus* bacteria were isolated from pus found on the feed of inpatients at RSUP Dr. M. Djamil Padang, who suffers from diabetic foot ulcers. The pus obtained was isolated for *S.aureus* bacteria using MSA selective media, then continued with gram staining and catalase testing. Antibacterial activity was determined through the Kirby-Bouer disc diffusion test. Three isolated of *S. aureus* bacteria from 4 patient's pus were isolated. Based on this test, it was found that the 1,25% concentration of the MSC secretome did not have antibacterial activity, while the 2,5% concentration only provided inhibition at P2, amounting to 6.3 mm. At a concentration of 5%, there is an inhibitory power of 7.5 mm (P1), 8.2 mm (P2), and 6.4 mm (P4). At a concentration of 10% v/v, it has an inhibitory power of 8.7 mm (P1), 9.6 mm (P2) and 6.8 mm (P4). Based on tests using the Kruskal-Wallis method, differences in concentration significantly impacted changes in the MSC secretome's inhibitory power. Adipose MSC secretome has antibacterial activity against *S. aureus* bacteria isolated from diabetic foot ulcer patients with moderate potency. The increase in concentration used significantly impacted changes in the secretome inhibitory power.

Keywords: MSC, MSC secretome, antibacterial activity, S.aureus, diabetic foot ulcer

Parenteral Nutrition and Compatibility Issues

Yelly Oktavia Sari

Faculty of Pharmacy, Universitas Andalas, Padang, 25163. West Sumatera. Indonesia
Email: yellyoktavia@phar.unand.ac.id

ABSTRACT

Intravenous drug administration in neonatal intensive care unit (NICU) is critical because of poor venous access, polymedication, fluid restriction and low infusion rate. Since parenteral nutrition (PN) is infused intravenously, it is often considered as a vehicle for medication administration. Medications may be added to PN formulations in an effort to decrease fluid requirements, reduce the need for Y-site injections, reduce the possibility of line contamination due to manipulation and decrease labor time required for drug administration. Although these reasons may seem compelling, the physicochemical complexity of PN formulations makes their interactions with parenteral medications a very challenging compatibility dilemma. The stability and compatibility of total parenteral nutrition mixtures compounded for patients requiring nutritional support is paramount to their safety on intravenous infusion. The most significant pharmaceutical issues associated with mixing total parenteral nutrition formulations affecting their safety involve the stability of lipid-injectable emulsions and the compatibility of calcium and phosphate salts. Drug-nutrient interactions result in derangements in fluid and electrolyte homeostasis, changes in vitamin status, and disturbances acid-base balance. Recognition of these drug-nutrient interactions may assist the clinician to prevent metabolic complications and to achieve desired therapeutics outcomes.

Keywords: Parenteral Nutrition, Neonatus, Compatibility.

Essential Oils from Selected Zingiberaceae Rhizomes as Halal Antimicrobial and Wound Healing Agents

Suryati

Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatra, Indonesia 25163
Email: suryati@phar.unand.ac.id

ABSTRACT

The halal status of raw materials used in medicine has become a significant issue, particularly in Muslim countries. Wound-healing substances may come from non-halal sources. Therefore, finding an alternative source derived from halal materials, such as essential oils (EOs), is necessary. Thus, this research aimed to identify and evaluate 18 different types of rhizome oil and use a chemometric approach to assess the association between metabolite profile and antibacterial and wound healing activity. The essential oil was extracted for 6-8 hours using hydrodistillation. Then, the physical properties of EOs were evaluated. FTIR and GC-MS spectroscopy were used to analyze the chemical composition of rhizome EOs. The broth microdilution method was used to measure antimicrobial activity, while the fibroblast proliferation and migration assay was used to assess in-vitro wound healing activity. A chemometrics technique based on the PLSR model was used to identify the metabolite responsible for the bioactivities. Rhizome EOs are scented and range in color from colorless to brown. The extraction yield ranged between 0.1% and more than 1% v/w. Except for white turmeric, which had a specific gravity of 1.0277 g/ml, all rhizome oil had a specific gravity of 0.8 to 0.9 g/ml. White turmeric (TP DR) has the highest refractive index (RI = 1.5191). Seven harmful microorganisms were tested for antibacterial properties. Ginger essential oils showed the lowest MIC values (16-125 g/ml) and a broad inhibitory spectrum with bactericidal activity against most test pathogens. In the time-kill assay, red ginger oil (JM DT) killed P. mirabilis at MIC and 2 MIC in only 2 hours, but it killed S. epidermidis at MIC and 2 MIC in 12 hours and reduced the number of bacteria killed. The chemometric approach to essential oil analysis is both faster and less expensive. Further research should be conducted to assess the bioactivity that results from the synergistic effect or its single component, as well as to find elements that significantly impact the variety of its chemical compositions so that EOs can be created as a wound healing product.

Current Drug Development Involving BDDCS Strategy And Pharmacogenomic Approach

Taofik Rusdiana

Drug Delivery & Disposition Division, Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmacy, Universitas Padjadjaran
Email: t.rusdiana@unpad.ac.id

ABSTRACT

The Biopharmaceutics and Drug Disposition Classification System (BDDCS) is a system used to classify drugs based on how they are processed in the body, encompassing aspects like absorption, distribution, metabolism, and elimination. BDDCS complements the drug classification system based on its solubility and permeability known as the BCS (Biopharmaceutics Classification System). Thus far, substantial efforts in drug development have yielded positive outcomes, particularly in enhancing solubility and dissolution or augmenting permeability, which are applied the BCS strategy. Nevertheless, it is essential to recognize that the term of permeable is not automatically absorbable, and absorbable is not automatically bioavailable. Therefore, we must not content ourselves solely with improving solubility and permeability; we must also consider other factors that influence absorption, distribution, metabolism, and elimination since these collectively determine bioavailability. Consequently, integrating drug disposition considerations, such as BDDCS, into the drug development strategy is imperative. Recently, there has been extensive discourse surrounding the role of efflux transporters like P-glycoprotein (PgP), which can pump drugs out of cells, thereby reducing their absorption and distribution within the body. This phenomenon applies to several drugs, including actinomycin, ritonavir, cyclosporine, levofloxacin, and atorvastatin, all of which are PgP substrates. Despite their good solubility and permeability, these drugs exhibit limited bioavailability. One approach to enhancing the bioavailability of such drugs is to introduce substances (either other drugs or excipients) that possess a higher affinity for PgP, thereby inhibiting its activity during the drug efflux process. Additionally, strategies can be devised to inhibit the activity of specific metabolizing enzymes like CYP450 to decrease the rate or extent of drug metabolism, thereby maintaining the drug's bioavailability. The last strategies should also consider the drug metabolizing enzymes polymorphism.

CONFERENCE SCHEDULE

CONFERENCE TIMETABLE

DAY 1: MONDAY, 30TH OCTOBER 2023

Time (GMT +7)	Agenda	Venue	PIC
07.30-08.00	Participant registration	Main room	Committee
08.00-08.45	Opening Ceremony Opening speech: • Committee chairperson • Dean of Faculty of Pharmacy, Universitas Andalas	Main room	MC
08.45-09.00	Coffee break		
Session 1			
09.00-09.45	**Plenary Lecture I:** **Ir Audy Joinaldy, S.Pt, M.M, IPM, ASEAN.Eng** Deputy Governor of West Sumatra, Indonesia	Main room	Moderator: **Prof. Dr. apt. Marlina, M.S**
09.45-10.00	Q&A session		
10.00-10.45	**Plenary Lecture II:** **Assoc. Prof. Dr. Winai Dahlan** Founder Director of the Halal Science Center Chulalongkorn University, Thailand		
10.45-11.00	Q&A session		
11.00-11.45	**Plenary Lecture III:** **Prof. Dr. Irwandi Jaswir, M.Sc** Research Coordinator of Halal Industry Research Centre, IIUM, Malaysia		
11.45-12.00	Q&A session		
12.00-13.00	Lunch break		

CONFERENCE TIMETABLE

Time (GMT +7)	Agenda	Venue	PIC
Session 2 (Parallel)			
13.00-16.00	**Parallel Session** • **Invited Speaker** • **Oral Presentation**	Breakout room	

DAY 2: TUESDAY, 31ST OCTOBER 2023

Time (GMT +7)	Agenda	Venue	PIC
07.30-08.00	Participant registration	Main room	Committee
Session 3			
08.00-08.45	**Plenary Lecture IV:** **Prof. Dr. Erizal Zaini, M.Si** Crystallography Researcher, Universitas Andalas, Indonesia	Main room	Moderator **Prof. Dr. rer.nat. apt. Dian Handayani**
08.45-09.00	Q&A session		
09.00-09.45	**Plenary Lecture V:** **Prof. Hiroshi Kanzaki, Ph.D** Natural Product Discovery Researcher, Okayama University, Japan		
09.45-10.00	Q&A session		
Session 4 (Parallel)			
10.00-12.00	**Parallel Session** • **Invited Speaker** • **Oral Presentation**	Breakout room	
12.00-13.00	Lunch Break		

CONFERENCE TIMETABLE

Time (GMT +7)	Agenda	Venue	PIC
Session 5			
13.00-13.45	**Plenary Lecture VII:** **Prof. Dr. apt. Abdul Rohman, SF, M.Si.** Director of Institute for Halal Industry & System Universitas Gadjah Mada, Indonesia	Main room	Moderator **Prof. Dr. apt. Almahdy, MS**
13.45-14.30	**Plenary Lecture VI:** **Assoc. Prof. Dr. Moohamad Ropaning Sulong** Halalan Thayyiban Research Centre (HTRC), Universiti Islam Sultan Sharif Ali (Unissa), Brunei Darussalam		
14.30-15.15	**Plenary Lecture VIII:** **Dr. Muhammad Aqil Irham, M.Si** Head of Indonesian Halal Product Assurance Agency/BPJPH		
15.15-16.00	Q&A session		
16.00-16.30	**Closing Ceremony** **Closing speech:** • **Vice Dean of Faculty of Pharmacy, Universitas Andalas**	Main room	MC

PARALLEL SESSION SCHEDULE

DAY 1

Room 1 : Biology Pharmacy
Invited Speaker : Dr. apt. Nova Syafni, M.Farm
Moderator : Dr. apt. Dira Hefni, M.Sc

No	Time	Code	Name	Title
1	13.00-13.15	Invited Speaker	Dr. apt. Nova Syafni, M.Farm	Study on Natural Products from Sumatran Plants; Isolation and Bioactivities
2	13.15-13.25	OP-008	Musyirna Rahmah Nasution	Potential of Nipa (*Nypa Fruticans* Wurmb)Fruit Juice Supplemented in Kombucha Beverage as Antibacterial Agent
3	13.25-13.35	OP-019	Ayu Rahmawati	Antibacterial Potential Test And Phytochemical Screening Of Leaf Ethanol Extract Of Several Mangrove Species In Siak Regency, Riau Province Indonesia
4	13.35-13.45	OP-024	Noveri Rahmawati	Cytotoxic Fraction of *Uncaria Nervosa* Leaves and Its Cell Migration and Apoptosis Effect of Mcf-7 Cells
5	13.45-13.55	OP-026	Mega Yulia	Viability Study of Tapak Liman (*Elephantopus scaber* Linn) Leaves toward Raw 264.7 Cells
6	13.55-14.05	OP-027	Muhammad Alfian	Test of the physical stability and activity of hair growth tonic with cocoa bean extract in mice
7	14.05-14.15	OP-050	Siti Hamidatul 'Aliyah	Bioactivities of Leaves and Flower *Melastoma malabathricum* L extract as antioxidant and antibacterial agent
8	14.15-14.25	OP-066	Bina Lohita Sari	Total Flavonoid Content, Antioxidant Activity, and Urokinase Type Plasminogen Activator Inhibitor of *Cananga odorata* and *Lantana camara* Leaves Extract

DAY 1

Room 1 : Biology Pharmacy
Invited Speaker : Dr. apt. Nova Syafni, M.Farm
Moderator : Dr. apt. Dira Hefni, M.Sc

No	Time	Code	Name	Title
9	14.25-14.35	OP-071	Fahrauk Faramayuda	Extraction Time Effect On Active Compounds Levels In Cat Whiskers (*Orthosiphon Aristatus* (Blume) Miq.)
10	14.35-14.45	OP-099	Fathiyyah Nurul Ashilah	Subacute Toxicity Study of Ethanol Extract of Noni Fruit (*Morinda citrifolia* L.) on Creatinine Clearance Levels in Male White Rats
11	14.45-14.55	OP-100	Annisa Zainuddin	Subacute Toxicity Test of Ethanol Extract of Noni Fruit (*Morinda citrifolia* L.) on Kidney Histology of Male White Rats
12	14.55-15.05	OP-101	Alicia Va Yanson	The Effects of Noni (*Morinda citrifolia* L.) Ethanol Extract on SGPT and SGOT Enzyme Levels of Male White Rat
13	15.05-15.15	OP-107	Eliza Arman	Combined Effect of Topical Application of Virgin Coconut Oil (VCO) and Black Cumin Oil (*Nigella Sativa*) on the Upregulation of VEGF Gene Expression and Wound Healing in Diabetic Ulcerated Rats
14	15.15-15.25	OP-108	Rina Herowati	Anti-arthritis Activity of *Zingiber officinale* Roscoe and *Imperata cylindrica* Rhizome Extract Combination
15	15.25-15.35	OP-124	Fitri Rachmaini	Purified Gambir (*Uncaria gambir* (Hunter) Roxb.) Attenuate Renal Function in Alloxan-Induced Diabetic Male Rats
16	15.35-15.45	OP-127	Amanda Zulfika Putri	Metabolite Profiling, Antibacterial, and Anti-Tyrosinase Activity of Temu Kunci (*Boesenbergia rotunda* (L.) Mansf.)
17	15.45-15.55	OP-137	Yulia Inri	Isolation of Antibacterial Compound from Endophytic Fungus *Aspergillus terreus* JMR4

DAY 1

Room 2 : Pharmaceutical Chemistry
Invited Speaker : Prof. Rahmana Emran Kartasasmita
Moderator : apt. Annisa Fauzana, M.Farm

No	Time	Code	Name	Title
1	13.00-13.15	Invited Speaker	Prof. Dr. rer. Nat. apt. Rahmana Emran Kartasasmita	Halality/Halalness Assurance in Drug Discovery Process
2	13.15-13.25	OP-004	Fitria Indah Permata Sari	Soy Souce Quality Mapping by Combination of UV-Vis Spectroscopy and Chemometric Analysis
3	13.25-13.35	OP-007	Dr. apt. Dewi Astriany, M.Si.	Expression and Characterization of Single-Chain Fragment Variable Antibody in *Escherichia coli* for Detection of Dengue Virus NS1 Antigen
4	13.35-13.45	OP-022	Kuni Zu'aimah Barikah	Effect of Quercetin and Avobenzone Concentration on Physical Characterization and In Vitro Activity of Sunscreen
5	13.45-13.55	OP-032	Fahrauk Faramayuda	HPLC Method Validation For Quantification Of Sinensetin In Cat Whiskers
6	13.55-14.05	OP-040	Ully chairunisa	Analysis of Physico-Chemical Properties, Target Potential of TGF β Keloid Cells (PDB ID: 1VJY and 3 TZM) and Toxicology of Pure Isolated Compounds from Natural Materials Using the In Silico Method
7	14.05-14.15	OP-042	Mainal Furqan	Unravelling The Interaction Between Garcinisidone-A And Her-2 Protein in Breast Cancer: A Computational Study
8	14.15-14.25	OP-043	Yori Yuliandra	Fighting Fosfomycin Resistance: In Silico Screening for FosA Inhibitors
9	14.25-14.35	OP-052	Rizky yulion putra	Characterization of Natural Product Compoud of *Melastoma malabathricum* with LC-MS/MS

DAY 1

Room 2 : Pharmaceutical Chemistry
Invited Speaker : Prof. Rahmana Emran Kartasasmita
Moderator : apt. Annisa Fauzana, M.Farm

No	Time	Code	Name	Title
10	14.35-14.45	OP-053	Jantje Wiliem Souhaly	Anticancer activity of *Piper retrofractum* targeting in Apoptosis Through Computational study
11	14.45-14.55	OP-057	Mashuri Yusuf, S.Si., M.Farm	Cytotoxic Activity And Phytochemical Screening Of Etanol Extract Of Bajakah Tampala (*Uncaria lanosa* Var. Ferrea (Blume) Ridsdale) On Breast Cancer Cell Lines MCF-7
12	14.55-15.05	OP-081	Dini Hanifa	Determination of Total Antioxidant and Phenolic Contents of Plant Extracts as Bioreductors in the Formation of Silver Nanoparticles
13	15.05-15.15	OP-083	Beta Herilla Sekti	Determining the SPF (Sun Protection Factor) Value of Jukut Pendul Ethanol Extract Using UV-Vis Spectrophotometry Method
14	15.15-15.25	OP-090	Muhammad Atha Hafizh Sismaya	Analysis of Apoptotic Cell Death On MCF7/HER2 Breast cancer Cell After Induction Of Rubraxanthone compound by Double Staining Method
15	15.25-15.35	OP-093	Adzra Yumna Raihan	Cytotoxic Study of Rubraxanthone on MCF-7/HER2 Breast Cancer Cells Using The Microtetrazolium Assay (MTT)
16	15.35-15.45	OP-103	Aldesra Fitri	Antibacterial Activity Test of Ethanol Extract of Lime Peel (*Citrus aurantifolia*) against Staphylococcus aureus, Pseudomonas aeruginosa and Propionibacterium acnes
17	15.45-15.55	OP-139	Diar Herawati	The Influence of Non-Covalent Bonding Between Antibiotics with NSAIDS (Non Steroidal Anti-Inflammatory Drugs) on the TG-DTA (Thermo Gravimetric-Differential Thermal Analysis) Profile

DAY 1

Room 3a : Clinical Pharmacy
Invited Speaker : Prof. Susi Ari Kristina, S.Farm., M.Kes
Moderator : apt. Dita Permatasari, M.Farm

No	Time	Code	Name	Title
1	13.00-13.15	Invited Speaker	Prof. Dr. apt. Susi Ari Kristina,	Pharmacists' provision and challenges of health promotion services towards non-communicable diseases in Indonesia
2	13.15-13.25	OP-003	Ari Yuniarto	The Profile of Antibiotic Use of COVID-19 Inpatients at Dr. Sitanala Hospital Tangerang in the Year 2021
3	13.25-13.35	OP-023	apt. Lusi Indriani, M.Farm.	Relationship Between Treatment Duration and Drug Regimen with Incidence of Side Effects in Drug-Resistant Tuberculosis (DR-TB) Patients at Pulmonary Hospital Bogor
4	13.35-13.45	OP-033	Mayang Aditya Ayuning Siwi	The Relationship between the Level of Knowledge about Traditional Medicine and the Demographic Characteristics of the Sumbersuko Village Community, Wagir District, Malang Regency
5	13.45-13.55	OP-106	Husnawati	Knowledge and Attitude of Hypertension Patients towards Traditional Medicines: A Cross-sectional Study at Public Health Center, Siak, Riau
6	13.55-14.05	OP-038	Hidayah Karuniawati	Assessment of Antibiotics Sales in Shops and Grocery Stores in Boyolali, Indonesia
7	14.05-14.15	OP-056	apt. Yanuar As'hari Cahyaningrum , M.Pharm	Evaluation of Compliance with Good Drug Distribution Practices as a Quality Management System at Pharmaceutical Wholesalers in the Madiun Area
8	14.15-14.25	OP-062	Dr..Hansen Nasif. Apt., Sp.FRS	Study of Recommendation the Medication Options for Productive Cough Without Infection Symtoms for Self-Medication from Pharmacy Employees in Kuranji Disctrict, Padang City

DAY 1

Room 3a : Clinical Pharmacy
Invited Speaker : Prof. Susi Ari Kristina, S.Farm., M.Kes
Moderator : apt. Dita Permatasari, M.Farm

No	Time	Code	Name	Title
9	14.25-14.35	OP-065	Rosaria Ika Pratiwi	The Rationality of Antibiotic Use in Community-Acquired Pneumonia Inpatients
10	14.35-14.45	OP-079	Baha Udin	Cost-Effectiveness Analysis of Combination Salbutamol-Ipratrorium and Salbutamol Single in Patients Asthma of dr. Dradjat Prawiranegara Serang Hospital
11	14.45 -14.55	OP-091	Nikmatul ikhrom eka jayani	The Effectiveness of Digital Pamphlets to Improve Herbal Knowledge of Herbal Drink Consumer
12	14.55-15.05	OP-096	apt. Fitri Andriani Fatimah, M.Pharm.Sci.	Analysis of the Cost Effectiveness of Monotherapy and Combination Antidiabetic Treatment in Covid-19 Inpatients Suffering from Type 2 Diabetes Mellitus at Panembahan Senopati Hospital, Bantul, Yogyakarta
13	15.05-15.15	OP-102	Hansen Nasif	Profile of Hand Sanitizers Sold Online As An Effort To Prevent Covid-19 Infection Through Assessment of Alcohol Content
14	15.15-15.25	OP-111	Eva Sartika Dasopang	Communication, Information, and Education Services Related to Adherence to Taking Medication for Patients with Type 2 Diabetes Mellitus at RSUP H. Adam Malik Medan
15	15.25-15.35	OP-114	Ivana Regita Viviani	Analysis of Pharmacists' Knowledge Level on Drug Management with Drug Availability Level in Community Health Centers in Padang City
16	15.35-15.45	OP-115	Annisa Rizkiia Z	Analysis of Patient Satisfaction with Pharmaceutical Services at Reksodiwiryo Hospital in Padang City
17	15.45-15.55	OP-116	Risa Susanti	Correlation Between Polypharmacy and Potential Drug Interaction in ICU Patients at Dr. Slamet Garut Hospital

DAY 1

Room 3b : Pharmacology
Invited Speaker : Prof. Susi Ari Kristina, S.Farm., M.Kes
Moderator : apt. Yoneta Srangenge, M.Sc

No	Time	Code	Name	Title
1	13.00 -13.15 (room 3.a)	Invited Speaker	Prof. Dr. apt. Susi Ari Kristina, S.Farm., M.Kes	Pharmacists' provision and challenges of health promotion services towards non-communicable diseases in Indonesia
2	13.15-13.25	OP-006	Sri Oktavia	Anticancer Activity of Piperine on Cell Proliferation, p53 and hTERT expression in HeLa Cells
3	13.25-13.35	OP-010	Prof. Dr. apt. Dyah Aryani Perwitasari, M.Si., Ph.D.	Liver Functions Profile of Tuberculosis Patients in Indonesia During Antituberculosis Treatment
4	13.35-13.45	OP-013	apt. Ifora, M. Farm	Combinational Effects of Asam Kandis (*Garcinia cowa* Roxb.) Leaves Ethanolic Extract and Doxorubicin on T47D Breast Cancer Cell
5	13.45-13.55	OP-018	Nursyafni	Anti-infammatory activity of An Ethanol Extract of Pucuk Merah (*Syzigium myrtifolium* walp.) in vivo
6	13.55-14.05	OP-020	Lucia Hendriati	The Effectivity of Ethanol Extract of *Smallanthus sonchifolius* Patch on Microscopic Parameters of Gangrene Wounds of White Rats
7	14.05 -14.15	OP-021	Armenia	Rosella Flower (*Hibiscus sabdariffa*. L) as an Antidiabetes: Ethyl Asetate Fraction Effect to Plasma MDA, TNF-A, Platelet and Bleeding Time on Diabetic Rats
8	14.15-14.25	OP-031	Tri Fitri Yana Utami	Effect of Morinda Fruit Extract (*Morinda citrifolia* Linn) on Ulcerative Colitis Disease Activity Index and Colon Lesion Macrocopy in Acetic Acid-Induced Mice

DAY 1

Room 3b : Pharmacology
Invited Speaker : Prof. Susi Ari Kristina, S.Farm., M.Kes
Moderator : apt. Yoneta Srangenge, M.Sc

No	Time	Code	Name	Title
9	14.25-14.35	OP-034	Aprilita Rina Yanti Eff	Unraveling the Potential Benefit of Indonesian Jamu in Metabolic Syndrome via Antihypertensive and Antioxidant Activity in Rat- Induced Fructose 10%
10	14.35-14.45	OP-047	Netty Suharti	Effect of Ethyl Acetate Fraction of Rosella Petals (*Hibiscus sabdariffa* L.) to The Blood Sugar and Fat on White Male Diabetic Rats
11	14.45 -14.55	OP-054	Fenny Khairunnisa	Anti-Diabetic Potential and Histopathology Change in the Pancreas of Male White Mice Induced-Alloxan From Three Variety of Green Coffee Beans
12	14.55-15.05	OP-063	Herlina	Standardization and Antidiarrheal Activity of Ethanol Fraction of Melinjo Leaves (*Gnetum gnemon* L. (Linn.)) on Male White Rats Wistar Strain in Salmonella typhi Bacteria Induced
13	15.05-15.15	OP-068	Dr.apt.Ifmaily, S.Si.,M.Kes	The Effect of Arumanis Mango Rind (*Mangifera indica* L) Extract as Antidiabetic in Rats Model
14	15.15-15.25	OP-078	Adinny Julmiza	Activity of Pegagan Embun Extract (*Hydrocotyle sibthorpioides* Lam.) in Capsule Dosage Form to SGPT and SGOT Levels in Humans
15	15.25-15.35	OP-087	Fanny Dita Zhafirah	Effect of Cowanin on Inhibition of Migration of MCF-7/HER2 Breast Cancer Cells by Scratch Wound Healing Method
16	15.35-15.45	OP-089	Idfi Adlina	Effect of Rubrasanton Compounds on Inhibition of migration of MCF-7/HER2 Breast Cancer Cells by the Scratch Wound Healing Method
17	15.45-15.55	OP-098	Nola Florida	Subacute Toxicity Study of Moringa Leaves Extract (*Moringa oleifera* Lam.) on Creatinine Clearance and AST Levels of Male White Rat

DAY 1

Room 4 : Halal Research/Biology Pharmacy
Invited Speaker : Assoc. Prof. Dr. Betania Kartika, M.A
Moderator : apt. Rahmad Abdillah, M.Si

No	Time	Code	Name	Title
1	13.00 -13.15	Invited Speaker	Betania Kartika	Muslim Friendly Medical Tourism; Complementary Medicines and Tibbun Nabawy Practices
2	13.15-13.25	OP-016	apt. Meilinda Mustika	Antioxidant Activities Of Ethanol Extracts, N-Hexane Fractions, Ethyl Acetate Fractions, and Water Fractions From Five Varieties of *Ficus carica* Leaves
3	13.25-13.35	OP-028	apt., Yulianis	Antibacterial Activity of Fungal Endophytes Isolated from *Cyathea contaminans* (Hook) Copel
4	13.35-13.45	OP-029	Dwi Lestari	Rapid Detection of Rat Meat Adulteration in Beef Sausages Using FTIR-ATR Spectroscopy and Chemometrics for Halal Authentication
5	13.45-13.55	OP-046	Desi Eka Putri	Rubraxanthon-Mediated Modulation of Cyclin D1 Protein Expression in MCF-7/HER2 Breast Cancer Cell Line: A Western Blot Analysis
6	13.55-14.05	OP-048	Fefpi Nur Afnifitri W.	Xylose Production from Xylan Onggok Through Fermentation of *Bacillus subtilis* and *Penicillium janczewskii*
7	14.05 -14.15	OP-051	Santi Perawati	Cytotoxic Activity of Mikania Species (*Mikania micrantha* Kunth and *Mikania cordata* (Burm. F) B.L.Rob) Against MCF-7 Breast Cancer Cells Using the MTS Assay
8	14.15-14.25	OP-060	Irene Puspa Dewi	*Curcuma aeruginosa* Roxb. extract inhibits the secretion of proinflammatory cytokines on Raw 264.7 macrophages
9	14.25-14.35	OP-061	Ruri Putri Mariska	Sunscreen Activity of UV-B Absorption of the n-Butanol Fraction and the Spray Gel Preparation of Senduduk Leaves (*Melastoma malabathricum* L.)

DAY 1

Room 4 : Halal Research/Biology Pharmacy
Invited Speaker : Assoc. Prof. Dr. Betania Kartika, M.A
Moderator : apt. Rahmad Abdillah, M.Si

No	Time	Code	Name	Title
10	14.35-14.45	OP-072	Dwisari Dillasamola	Study of Active Isolated Compounds from Sungkai Leaf (*Peronema canescens* Jack) as Immunostimulant from Exposure of the Sars-Cov-2 Virus Antigen to Natural Killer Cells
11	14.45 -14.55	OP-080	Ari Widayanti	Antioxidant Activity of Fractionated Mangosteen Peel Extract (*Garcinia mangostana*)
12	14.55-15.05	OP-082	Triswanto Sentat	Development and Validation of a Bioanalytical Method for Therapeutic Drug Monitoring of Amikacin in Human Plasma Using Ultra Performance Liquid Chromatography–Tandem Mass Spectrometry
13	15.05-15.15	OP-095	Riskana Soraya Putri	Analysis of Turmeric (*Curcuma longa* Linn) Essential Oil from Different Growing Locations Using FTIR/GC-MS Spectroscopy Coupled to Chemometrics and Its Wound Healing Activities
14	15.15-15.25	OP-097	Sherly Handayani	Analysis of Apoptotic Cell Death on MCF-7/HER2 Breast Cancer Cell After Being Treated by Cowanin Compound Using Double Staining Method
15	15.25-15.35	OP-112	Muhammad Azhari	Antimycobacterial Properties of Ethyl Acetate Extracts of Marine-Derived *Aspergillus ostianus* and *Aspergillus flavus*
16	15.35-15.45	OP-121	Rismah Fadillah	Soxhlet Extraction and FT-IR Spectroscopy Coupled to Chemometrics: Authenticating Beef and Pork Rendang
17	15.45-15.55	OP-135	Sinta Ratna Dewi	Factors Associated With Treatment Adherence Among Hypertensive Patients In Samarinda City Hospital : A Cross-Sectional Study

DAY 1

Room 5 : Pharmaceutical Technology
Invited Speaker : Prof. Dr. apt. Henny Lucida
Moderator : apt. Adhitya Jessica, M.Si

No	Time	Code	Name	Title
1	13.00 -13.15	Invited Speaker	Prof. Dr. apt. Henny Lucida	Nanophytosome: A Promising Carrier for Phytocosmeceuticals & Phytopharmaceuticals
2	13.15-13.25	OP-002	Viviane Annisa	A novel formulation of ketoconazole entrapped in alginate with anionic polymer beads for solubility enhancement: Preparation and characterization
3	13.25-13.35	OP-014	Nurbaiti	Formulation and physical stability of hair tonic ethanol extract of Katuk Leaves (*Sauropus androgynous* (L.) Merr)
4	13.35-13.45	OP-015	apt. Eka Siswanto Syamsul, S.Farm,M.Sc	Formulation and Evaluation of Nanoemulgel from *Sonneratia caseolaris* Leaf Extract
5	13.45-13.55	OP-025	Sudrajat Sugiharta	Optimization of Collagen Extraction Conditions from Milkfish (Chanos chanos) Scale as an Emulsifier
6	13.55-14.05	OP-030	Nola Rahmadasmi	Preparation of Liquid Crystal from Multicomponent Crystal of Usnic Acid and N-Methyl-D-Glucamine for Transdermal Drug Delivery System
7	14.05 -14.15	OP-035	Eka Desnita	Roll On anti inflamatory essesnsial oil Basil Leave (*Ocimum sanctum*.L)
8	14.15-14.25	OP-039	Nori Wirahmi	Effect of Oil Phase in Self Emulsifiying System Nanoemulsion Formulation on Particle Size using PSA Malvern Mastersizer
9	14.25-14.35	OP-059	apt. Erni Rustiani, M.Farm.	Tablet Formulation Mixed of Papaya Leaf (*Carica papaya*) and Cinnamon Bark (*Cinnamomum burmanii*) Extracts with Variation Concentrations of PVP K-30 as a Binder

DAY 1

Room 5 : Pharmaceutical Technology
Invited Speaker : Prof. Dr. apt. Henny Lucida
Moderator : apt. Adhitya Jessica, M.Si

No	Time	Code	Name	Title
10	14.35-14.45	OP-064	apt. Uce Lestari, S.Farm, M.Farm	Determination of Sun Protection Factor (SPF) Value and Screening Phytochemical of Extract Ethanol Leaf Surian (*Toona sinensis*)
11	14.45 -14.55	OP-074	Hafizhatul Akrami	Formulation of Anti-Blackhead Rubber Mask from Purified Gambier (*Uncaria gambir* [Hunter] Roxb.)
12	14.55-15.05	OP-077	Raudhatul Fadhilah	Encapsulation of Phase Change Material Into Cellulose As a Fever Compress
13	15.05-15.15	OP-086	Lili Fitriani	Preparation of Spray Dried Multicomponent Crystals of Trimethoprim-Mandelic Acid and Its Physicochemical Characterization
14	15.15-15.25	OP-094	Karina Citra Rani	Development and Characterization of Surface Solid Dispersion *Moringa oleifera* Leaf Extract Microcrystalline Cellulose by Co-Grinding Method
15	15.25-15.35	OP-122	Uswatul Hasanah	Tenoxicam-Tromethamine Multicomponent Crystal: Physicochemical Characteristics, Solubility, and Dissolution Evaluation
16	15.35-15.45	OP-133	Sari Meisyayati	Physical Characteristics and Release Profile of *Centella asiatica*/Honey/κ-Carrageenan-Based Hydrogel Film to Promote Diabetic Foot Ulcer Management
17	15.45-15.55	OP-140	Intan Meisi	Effect of Sonicationon Viscosity And Flow Properties of Liquid Crystal Collagen From Snakehead Fish (*Channa striata*)

DAY 2

Room 1 : Biology Pharmacy/Pharmacology
Invited Speaker : Dr. Fadzureena Jamaludin
Moderator : apt. Yori Yuliandra, M.Farm., Ph.D

No	Time	Code	Name	Title
1	10.00 -10.15	Invited Speaker	Dr. Fadzureena Jamaludin	Quality development of traditional herbs, preparations and herbal products: FRIM's experience
2	10.15-10.25	OP-012	Adriani Susanty	Apoptosis Induction Activity of *Voacanga foetida* (Blume) Rolfe Bark Isolate Compounds Against T47D Breast Cancer Cells
3	10.25-10.35	OP-041	Ayu Amelia Putri, S.Farm	The Effect of Catechins from Purified Gambier (*Uncaria gambir* Roxb.) and Vitamin C on Malondialdehyde (MDA) Levels of Male White Mice After Physical Activity
4	10.35-10.45	OP-058	Lia Mardiana	Phytochemical Screening And Antioxidant Activity Test of Lupun Root (*Poikilospermum suaveolens* (Blume) Merr) from South of Borneo
5	10.45 -10.55	OP-085	Aried Eriadi	Isolation of Endophytic Fungi and Antimicrobial Activity Test of Gambier Plants (*Uncaria gambier* (Hunter) Roxb)
6	10.55-11.05	OP-113	Risda Hayati	Chemopreventive Potential of N-Hexane Fraction of Kebiul Seeds (*Caesalpinia bonduc* (L) Roxb.) Bengkulu on Chorioallantoic Membranes Induced by bFGF
7	11.05-11.15	OP-126	Dean Pavvellin	Metabolite Profiling and Antioxidant Activities of Lunggo (*Citrus medica* L.) Peels and Leaves Essential Oils
8	11.15-11.25	OP-129	Joyce Artha Roslina Siregar	The Teratogenic Effect of Diethylene Glycol (DEG) on Fetus Morphology of White Mice (Mus musculus L.)
9	11.25-11.35	OP-136	Fahira Annisa Fitri	Subacute Toxicity Test Of Ethanol Extract Of Noni Fruit (*Morinda citrifolia* L.) On Liver Histology Of Male White Rats

DAY 2

Room 2 : Pharmaceutical Chemistry
Invited Speaker : Prof. Dr. apt. Marlina, MS
Moderator : apt. Azhoma Gumala, M.Farm

No	Time	Code	Name	Title
1	10.00 -10.15	Invited Speaker	Prof. Dr. apt. Marlina, MS	Activity Test of Antibacterial Mesenchymal Stem Cell Secretome Against *Staphylococcus aureus* Isolated from Diabetic Foot Ulcer Patients
2	10.15-10.25	OP-036	Rahmad Abdillah	Antimicrobial Activities Screening of Endophytic Fungi Isolated from *Graptophyllum pictum* L. Griff.
3	10.25-10.35	OP-055	Dira Hefni	Effect of Cowanin on Cyclin D1 Expression in MCF-7/HER2 Breast Cancer Cells
4	10.35-10.45	OP-067	Armita Harahap	Evaluation of the Anti-Tyrosinase-Anti-Aging Potential and Metabolite Profiling from the Bioactive Fraction of Corn Cob (*Zea mays* L.)
5	10.45 -10.55	OP-070	Annisa Fauzana	In Silico Analysis of Phsyco-chemical Properties, Target Potential and Anti-inflammation Activity of Tinocrisposid
6	10.55-11.05	OP-088	Angelicha Maysya Nahda	Effect of Cowanin Compounds on Cyclin D1 Protein Expression in MCF-7/HER2 Breast Cancer Cells Using Western Blot Method
7	11.05-11.15	OP-119	Nurrizka Kurniawati	In Silico Study of Analog Aloin on Human Serum Albumin Protein as an Antiglycation Agent in Diabetes Mellitus
8	11.15-11.25	OP-120	Fendi Yoga Wardana	Antioxidant Activities of Extract Kale (*Brassica oleracea* var. *sabellica*) Leaves
9	11.25-11.35	OP-123	Purnawan Pontana Putra	Exploring the Pharmacoinformatics Potential of *Morus macroura* Compounds for Drug Development
10	11.35-11.45	OP-128	Sary Rahma Dewiana	Unraveling the Wound Healing Potential of White Turmeric (*Curcuma Zedoaria* Rosc) Essential Oil from Various Regions in West Sumatera Using FT-IR/GC-MS Spectroscopy in Combination with Chemometric Analysis

DAY 2

Room 3 : Clinical Pharmacy
Invited Speaker : Dr. apt. Yelly Oktavia Sari
Moderator : apt. Fitri Rachmaini, M.Si

No	Time	Code	Name	Title
1	10.00 -10.15	Invited Speaker	Dr. apt. Yelly Oktavia Sari	Parenteral Nutrition And Compatibility Issues
2	10.15-10.25	OP-009	Dian Febiana	Evaluating Economic Outcomes: Single-Use Aspirin vs. Aspirin-Clopidogrel in Ischemic Stroke Patients Based on Barthel Index Scores at RSUP Dr. M. Djamil Padang
3	10.25-10.35	OP-017	Rabiul Fajri	The Impact Of Diuretic Therapy To The Clinical Outcome On Patients Congestive Heart Failure With Or Without Hypoalbuminemia In DR. M. Djamil Hospital Padang
4	10.35-10.45	OP-084	Resna Rerita	Assessing Cost and Utility of Glimepiride as An Add-on to Metformin Use in Diabetic Patients
5	10.45 -10.55	OP-104	R.F.X Premihadi Putra	Evaluation of Drug Management and Repair Strategy with Hanlon Method in the Installation of Pharmacy Hospital Level IV Madiun Year 2019
6	10.55-11.05	OP-105	EUGENIA SHEPANY	A Study of The Potential Drug-Drug Interactions of Antidiabetic Drugs Based on Literature in Geriatric Patients with Type 2 Diabetes Mellitus at RSUP Dr. M. Djamil Padang
7	11.05-11.15	OP-037	Dedy Almasdy	Self-Medication Pattern among Customers in a Community Pharmacy
8	11.15-11.25	OP-109	Nur Alima Husna	A Study of Potential Drug-Drug Interactions of Cardiovascular Drugs Based on Literature in Geriatric Patients With Congestive Heart Failure at Dr. M. Djamil Padang Hospital

DAY 2

Room 4 : Halal Research/Clinical Pharmacy
Invited Speaker : Dr. apt. Suryati, M.Sc
Moderator : apt. Dini Hanifa, M.Farm

No	Time	Code	Name	Title
1	10.00 -10.15	Invited Speaker	Dr. apt. Suryati, M.Sc	Essential Oils rom Selected Zingiberaceae Rhizomes as Halal Antimicrobial and Wound Healing Agents
2	10.15-10.25	OP-005	Najmiatul Fitria	Decreasing Cost Burden of Type2 Diabetes Mellitus Using Metformin-Glimepiride Combination on 2-hour Post-Prandial Blood Glucose
3	10.25-10.35	OP-045	Wirnawati	Application of FTIR Spectroscopy and Chemometrics on Beef Meatballs Adulterated with Dog Meat for Halal Authentication
4	10.35-10.45	OP-069	Hafid Syahputra	Identification of Lard on Processed Products in Medan City Using UV-Spectrophotometer with Linear Discriminant Analysis and Principal Component Analysis Methods
5	10.45 -10.55	OP-110	Yoneta Srangenge	Rationalizing Oral Analgesic Administration: An Investigation in Primary Healthcare
6	10.55-11.05	OP-118	Almahdy	Balancing Act: Investigating the Impact of Purified Gambir and Vitamin C on AST Levels
7	11.05-11.15	OP-125	Dedy Almasdy	Pharmacist's Response to Signs and Symptoms of Diseases in the Community Pharmacy
8	11.15-11.25	OP-130	Nabila Al Rizka	Cost-Utility Analysis of Amlodipine and Candesartan Combination in Hypertension Patients in Andalas University Hospital
9	11.25-11.35	OP-131	Genialita Fadhila	Correlation between Family Support and Health Professional Education on Tuberculosis Patient Compliance at Public Health Centers Tasikmalaya

DAY 2

Room 5 : Pharmaceutical Technology
Invited Speaker : Prof. apt. Taofik Rusdiana, M.Si., Ph.D
Moderator : apt. Lili Fitriani, M.PharmSc

No	Time	Code	Name	Title
1	10.00-10.15	Invited Speaker	Prof. apt. Taofik Rusdiana, M.Si., Ph.D	Current Drug Development Involving BDDCS Strategy and Pharmacogenomic Approach
2	10.15-10.25	OP-011	Rahmah Elfiyani	Garlic Extract Phytosome: Preparation and Physical Stability
3	10.25-10.35	OP-049	Dina Permata Wijaya	Formulation of Nanoparticle containing Kenikir Leaves Extract (*Cosmos caudatus* Kunth.) and Antidiabetic Activity in Rats
4	10.35-10.45	OP-073	Azhoma Gumala	Microencapsulation Bisoprolol Fumarate with Eudragit E PO by Solvent Evaporation Method
5	10.45-10.55	OP-092	apt. Yahdian Rasyadi, M. Farm	Kasturi Orange Peel (*Citrus microcarpa* Bunge) Essential Oil: Chemical Profile, Formulation as Roll On Aromatherapy and Its Evaluation
6	10.55-11.05	OP-117	Adhitya Jessica	Increased Dissolution Rate of Aceclofenac by Formation of Multicomponent Crystals with L-Glutamine
7	11.05-11.15	OP-132	Salman Umar	Bromelain Granules Formulation and Evaluation Using Factorial Design
8	11.15-11.25	OP-134	Pramulani Mulya Lestari	Development of Nanovesicular Systems For Transdermal Delivery of Atorvastatin Calcium
9	11.25-11.35	OP-138	Lidia	Enhanced Antioxidant Effect of *Peperomia pellucida* Extract Formulated in Pickering Nanoemulsion

ORAL PRESENTER'S ABSTRACT

OP-002

A NOVEL FORMULATION OF KETOCONAZOLE ENTRAPPED IN ALGINATE WITH ANIONIC POLYMER BEADS FOR SOLUBILITY ENHANCEMENT: PREPARATION AND CHARACTERIZATION

Viviane Annisa[1], Teuku Nanda Saifullah Sulaiman[2]*, Akhmad Kharis Nugroho[2], Agung Endro Nugroho[3]

[1]Program Doctoral Faculty of Pharmacy, Universitas Gadjah Mada, Indonesia
[2]Departement of Pharmaceutics, Faculty of Pharmacy, Universitas Gadjah Mada, Indonesia
[3]Departement of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Gadjah Mada, Indonesia
*Corresponding author. Email: tn_saifullah@ugm.ac.id

ABSTRACT

Alginate can be used in combination with a suitable polymer and be crosslinked with divalent ions and another polymer to enhance the solubility of the drug. Ketoconazole could be loaded into a matrix polymer consisting of alginate and anionic polymer through hydrogen bonds formed with the N atom of the ketoconazole. The method employed to produce ketoconazole beads involved ionic gelation with CaCl2 as a crosslinking agent, and polymers combination were used: alginate 100:0 (AL100), alginate:pectin 75:25 (AP75) and 50:50 (AP50), alginate:gum acacia 75:25 (AG75) and 50:50 (AG50), and alginate:carrageenan 75:25 (AK75) and 50:50 (AK50). The beads were characterized by using differential scanning calorimetry (DSC), scanning electron microscopy (SEM), Fourier transform infrared (FT-IR), X-ray diffraction (XRD), swelling study, in vitro drug release study, and solubility determination. The incorporation of ketoconazole into combination matrices of AL100, AG75, AP75, AP50, and AK75 resulted in significantly higher solubility in FaSSIF at pH 6.5 compared to pure ketoconazole.

Keywords: *anionic polymer, solubility, hydrogel, ionic gelation, crosslinked*

Supporting Agencies : Source of research funding by Grant Programme of the Faculty of Pharmacy Universitas Gadjah Mada. Contract 63.31.01/UN1/FFA/UP/SK/2023

Indexing : Pharmaceutics

OP-003

THE PROFILE OF ANTIBIOTIC USE OF COVID-19 INPATIENTS AT DR. SITANALA HOSPITAL TANGERANG IN THE YEAR 2021

Ari Yuniarto[1]* Saru Noliqo Rangkuti[1], Vrafanasta Atika Erdyana Sari[1]

[1]Faculty of Pharmacy, Muhammadiyah A.R. Fachruddin University (Unimar), Tangerang, 15720, Indonesia
*Corresponding author. Email: ari.yuniarto18@gmail.com

ABSTRACT

COVID-19 is a disease caused by SARS-CoV-2 that affects patients with mild to severe symptoms. Antibiotic therapy is not the primary treatment for COVID-19, but it can be used to prevent bacterial infections and manage symptoms. This research aims to analyze the use of antibiotics in COVID-19 inpatients at Dr. Sitanala Hospital in 2021. This study used an analytic descriptive design and retrospective data collection. The sample size included 90 patient medical records that met the inclusion criteria. The findings revealed that Levofloxacin was used in 81 patients (90%), while Azithromycin was administered in 9 patients (10%).

Keywords: *Antibiotics, Azithromycin, COVID-19, levofloxacin*

Indexing: Clinical Pharmacy

OP-004

SOY SOUCE QUALITY MAPPING BY COMBINATION OF UV-VIS SPECTROSCOPY AND CHEMOMETRIC ANALYSIS

Daimon Syukri[1], Rini[1] and Fitria Indah Permata Sari[1]

[1]Department of Agriculture and Product Technology, Andalas University, Indonesia
*Corresponding author. Email: daimon_syukri@yahoo.co.id

ABSTRACT

Soy sauce is one of the Asian processed foods that is widely consumed and known in almost all parts of the world, including Indonesia. The characteristic of Indonesian soy sauce that is different from other countries is sweet soy sauce. In this study, we successfully observed the differences in five soy sauce samples (A, B, C, D, and E) distributing in the Padang city market using a combination of UV-Vis spectroscopy and multivariate analysis (PCA). The samples was four traditional products and one national commercial ones as reference treatment. As the result, it was found that the UV-Vis spectrum trends of soy sauce samples B, D, and E had the same curve pattern as the control soy sauce (A) but the intensity was different. Meanwhile, sample C has a curve pattern and intensity that was very different from the other four samples. Based on PCA loading plot data at wavelengths of 200 - 400 nm there is a group separation between samples but samples D and E are in 1 group. At a wavelength of 400 - 800 nm, there was also a separation between each sample but samples B and D are in 1 group. This was might due to the composition of making soy sauce.The results indicated that there was different quality between traditional and national commercial product.

Keywords: *soy sauce, indicator, spectrophotometry, metabolomics.*

OP-005

DECREASING COST BURDEN OF TYPE2 DIABETES MELLITUS USING METFORMIN-GLIMEPIRIDE COMBINATION ON 2-HOUR POST-PRANDIAL BLOOD GLUCOSE

Najmiatul Fitria[1]*, Mila Andela[1], Resna Rerita[1], Hansen Nasif[1]

[1]Department Pharmacology and Clinical Pharmacy. Faculty of Pharmacy. Universitas Andalas. Padang. Indonesia
*Corresponding author. Email: najmiatulfitria@@phar.unand.ac.id

ABSTRACT

Type 2 Diabetes Mellitus (T2DM) can reduce life expectancy and significantly increase morbidity due to macrovascular diseases such as ischemic heart disease, stroke and microvascular diseases such as retinopathy, nephropathy, and neuropathy. Complications related to diabetes could reduce the quality of life. In Indonesia, the costs incurred for diabetes mellitus annually are around IDR 5 trillion to IDR 8 trillion and will increase as complications of the disease increase. Glimepiride is added to the first category for diabetes mellitus receiving metformin to improve blood sugar levels and reduce costs. The research was conducted descriptively by comparing random and fasting blood sugar levels with the total direct medical costs at Universitas Andalas Hospital. The study involved 114 medical records of patients referred in 2021. The data collected was the decrease in 2 hours post-prandial blood sugar and data on direct medical costs according to the perspective of a health care provider. An incremental cost value of IDR 43,291 was obtained for reducing post-prandial blood sugar by 21.92 mg/dl. From these results, it can be concluded that there is an increase in costs along with an increase in effect.

Keywords: *Type 2 Diabetes Mellitus, Metformin, Glimepiride, 2-hour postprandial*

Supporting Agencies: Research fund for the development of junior lecturer, DIPA the Faculty of Pharmacy Universitas Andalas, with number of contract 20/UN 16.10.D/PJ.01./2023

Indexing : Clinical pharmacy

OP-006

ANTICANCER ACTIVITY OF PIPERINE ON CELL PROLIFERATION, P53 AND HTERT EXPRESSION IN HELA CELLS

Sri Oktavia[1'2], Fatma Sri Wahyuni[3], Hasmiwati[4], Arni Amir[5]*

[1]Doktoral Program, Graduate School of Biomedical Science, Faculty of Medicine, Universitas Andalas, Padang;
[2]School of Pharmaceutical Science Padang, West Sumatra, Indonesia
[3]Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatera, Indonesia.
[4]Department of Parasitology, Faculty of Medicine, Universitas Andalas, Padang, Indonesia.
[5]Department of Biology, Faculty of Medicine, Universitas Andalas, Padang, Indonesia.
*Corresponding author. Email: rniamir@med.unand.ac.id

ABSTRACT

Cervical cancer is the most typical malignancy in women throughout the world. HPV infection is a cause of cancer through degradation and decreased activity of the p53 gene, a key player in the apoptosis pathway which plays a crucial role in the incidence of cancer. Along with p53, the hTERT gene is also believed to play an important role in tumor formation through increased telomerase activity caused by persistent HPV infection. The aim of this study was to determine the impact of piperine administration on cell proliferation, p53, and hTERT expression in HeLa cells. HeLa cells were divided into control groups and treated groups (piperine with concentrations of 65 µg/ml and 130 µg/ml). The MTT method was used to determine the antiproliferative activity of piperine, while to further assess its impact on gene expression, the qPCR method was used. Piperine was able to suppress cell growth with an IC50 value of 66.68 µg/ml. In HeLa cells, piperine can increase the expression of p53 and hTERT. Piperine offers anti-growth characteristics, triggering apoptosis by promoting the p53 gene. However, the increase in hTERT expression in this study is thought to be because cancer cells with high telomerase activity such as HeLa cells, are more resistant to anticancer agents.

Keywords: *Piperine, Expression of p53, hTERT, Proliferation, Cervical cancer*

Supporting Agencies : Source of research funding by research Ministry of Research and Technology Indonesia with number of contract 115/E5/PG.02.00.PL/2023

Indexing : Pharmaceutical Science

OP-007

EXPRESSION AND CHARACTERIZATION OF SINGLE-CHAIN FRAGMENT VARIABLE ANTIBODY IN ESCHERICHIA COLI FOR DETECTION OF DENGUE VIRUS NS1 ANTIGEN

Dewi Astriany[1]*, Umi Baroroh[1,2], Taufik Ramdani Tohari[2], Syarif Hamdani[1]

[1]Sekolah Tinggi Farmasi Indonesia (Indonesian School of Pharmacy), Bandung 40266, West Java, Indonesia
[2]Research Center of Molecular Biotechnology and Bioinformatics, Padjadjaran University, Bandung 40132, West Java, Indonesia
*Corresponding author. Email: dewiastriany@stfi.ac.id

ABSTRACT

Dengue fever is still a major health concern in tropical and subtropical regions around the world. To give improved treatment, early detection and effective therapy should be created. To confirm dengue infection, single-chain Fragment variable (scFv) antibodies can be utilised as a component of the diagnostic technique. There have been reports of scFv activity with high affinity to the NS1 dengue virus antigen. In the previous study, we constructed and expressed a vector carrying the anti-NS1 scFv gene. The recombinant proteins were successfully produced in the *E. coli* BL21(DE3) system in the Luria Bertani medium using a 0.5 mM final concentration of IPTG induction. The result showed that scFv found as a approximately 35 kDa protein characterised by SDS-PAGE method. It can be concluded that the soluble scFv anti-NS1 obtained can be a suitable candidate for the development of a diagnostic kit component for dengue disease.

Keywords: *scFv, NS1 antigen, dengue virus, expression, E. coli*

Supporting Agencies : Source of research funding by Ministry of Research, Technology and Higher Education of the Republic of Indonesia and Indonesian School of Pharmacy.

Indexing : Pharmaceutical Chemistry and Biotechnology

OP-008

POTENTIAL OF NIPA (NYPA FRUTICANS WURMB) FRUIT JUICE SUPPLEMENTED IN KOMBUCHA BEVERAGE AS ANTIBACTERIAL AGENT

Musyirna Rahmah Nasution[1]*, Maura Anisa[1], Nofriyanti[1]

[1]Sekolah Tinggi Ilmu Farmasi Riau , Pekanbaru, Riau, Indonesia
*Corresponding author. Email: musyirnarahmah@stifar-riau.ac.id

ABSTRACT

Kombucha Tea is one of the traditional drinks of fermentation results from tea and sugar solutions that have unique flavour of acid and sweet taste. The process of making Kombucha Tea requires nutrients for Kombucha microbial growth during the fermentation period. Nipa fruit (*Nypa fruticans* Wurmb) contains proteins, carbohydrates, fiber, sugar, vitamins and minerals as well as various secondary metabolites. Nipa fruit is considered to be used as a source of nutrition for Kombucha tea. This study aims to formulate and determine the antibacterial activity of nipa fruit in kombucha tea against *Escherichia coli* and *Staphylococcus aureus* bacteria by disc diffusion method. It was formulated into 4 formulas with a concentration of 0% (F1), 10% (F2), 20% (F3) and 30% (F4) added. The evaluation of the formula was carried out by organoleptic tests, pH, %TAT, total LAB, total yeast and alcohol for 14 days of fermentation. It's formula had good results in the evaluation of the formula and had antibacterial activity against *Escherichia coli* and *Staphylococcus aureus* with a weak category. The best treatment was obtained on the 14th day of F4 fermentation with the largest inhibitory diameter (14.11 mm). Based on the results of One Way ANOVA test, there were significant differences between the formulas on the diameter of bacterial inhibition.

Keywords: *Nipa Fruit, Kombucha Tea, Antibacterial, Escherichia coli, Staphylococcus aureus*

OP-009

EVALUATING ECONOMIC OUTCOMES: SINGLE-USE ASPIRIN VS. ASPIRIN-CLOPIDOGREL IN ISCHEMIC STROKE PATIENTS BASED ON BARTHEL INDEX SCORES AT RSUP DR. M. DJAMIL PADANG

Dian Febiana[1], Rahmi Yosmar[1], Najmiatul Fitria[1]*

[1]Department Pharmacology and Clinical Pharmacy. Faculty of Pharmacy. Universitas Andalas. Padang. Indonesia
*Corresponding author. Email: najmiatulfitria@phar.unand.ac.id

ABSTRACT

Ischemic stroke is a catastrophic disease that causes large costs in Indonesia. The high prevalence of stroke results in increased morbidity and mortality rates, which will impact the socioeconomic status of stroke patients. Cost Effectiveness Analysis (CEA) is a method in pharmacoeconomics that aims to make decisions regarding the rational choice of therapy and evaluate the economic impact on ischemic stroke patients. This study aims to determine the Incremental Cost Effectiveness Ratio (ICER) value of antiplatelet therapy in the aspirin-clopidogrel combination and the single aspirin group in ischemic stroke patients treated at the Regional General Hospital. Dr. M. Djamil Padang. The clinical parameter observed was the Barthel Index (BI) value. This research is a descriptive study with retrospective data collection using medical record data and the Hospital Management Information System (SIMRS) at RSUD Dr.M.Djamil Padang. The cost data shows the total direct medical costs incurred in treating ischemic stroke. Based on the results obtained, the Incremental Cost Effectiveness Ratio (ICER) value is IDR (-) 401,302. 71 per 1% increase in the Barthel Index. In this study, it can be concluded that the aspirin-clopidogrel combination has better cost-effectiveness than aspirin alone.

Keywords: *Cost-Effectiveness Analysis, Ischemic Stroke, Aspirin, Clopidogrel, Barthel Index*

Indexing : Clinical pharmacy

OP-010

LIVER FUNCTIONS PROFILE OF TUBERCULOSIS PATIENTS IN INDONESIA DURING ANTITUBERCULOSIS TREATMENT

Dyah Aryani Perwitasari[1]*, Didik Setiawan[2], Triantoro Safariana[3], Haafizah Dania[1], Imaniar Noor Faridah, Lalu Muhammad Irham[1]

[1]Faculty of Pharmacy, Universitas Ahmad Dahlan, Yogyakarta, Indonesia
[2]Faculty of Pharmacy, Universitas Muhammadiyah Purwokerto, Purwokerto, Indonesia
[3]Faculty of Psychology, Universitas Ahmad Dahlan, Yogyakarta, Indonesia
*Corresponding author. Email: dyah.perwitasari@pharm.uad.ac.id

ABSTRACT

Indonesia is in the third position of the highest number of tuberculosis disease over the world. Tuberculosis patients could experience adverse drug reactions, after few months of treatment. Mostly, they experienced nausea, vomiting, rash and dizziness. Around 10-20% tuberculosis patients experienced drug-liver injury, which may cause the decrease of patients' adherence. This study aimed to define the profile of liver function of tuberculosis patients during the treatment. We conducted the cohort study, with adult tuberculosis patients treated with the first line of antituberculosis as the inclusion criteria. The cohort study was conducted until the tuberculosis treatment finished. The pregnant and patients with comorbidities which related to liver function were excluded. We measured the total bilirubin, aspartate aminotransferase (AST) and alanine aminotransferase (ALT) over the 2nd ,4th and 6th months of the treatment. From 202 patients, there are 58.91% male patients and the mean age is 39.91 (SD: 17.18) years old. As 9% tuberculosis patients experienced the increased level of bilirubin, AST and ALT, and 50% among them experienced the increased level of bilirubin, AST and ALT start from 2nd month of treatment. The total bilirubin level in 2nd ,4th and 6th months were 0.57; 0.59 and 0.67 mg/dl, respectively. The AST levels were 27, 22, and 26 U/l in 2nd ,4th and 6th months, respectively, and the ALT levels were 21,19 and 25 U/l in 2nd ,4th and 6th months, respectively. At the end of the treatment around 4.5% tuberculosis patients experienced the high level of bilirubin, AST and ALT. Tuberculosis patients experienced hidden burden due to the decrease of liver function.

Keywords: *liver; tuberculosis, side effect, Indonesia*

Supporting Agencies: Source of research funding by Ministry of Education, Cultural, Research and Technology, contract number 075/E5/PG.02.00.PL/2023, 12 April 2023; 0254.8/LL5-INT/AL.04/2023, 17 April 2023; 004/WCR/LPPM UAD/IV/2023, 24 April 2023

Indexing: Clinical Pharmacy

OP-011

GARLIC EXTRACT PHYTOSOME: PREPARATION AND PHYSICAL STABILITY

Rahmah Elfiyani[1]*, Naniek Setiadi Radjab[1], Anisa Nurul Wijaya[1]

[1]Phaculty of Pharmacy and Sciences, Universitas Muhammadiyah Prof. DR HAMKA, Jakarta, Indonesia
*Corresponding author. Email: rahmahelfiyani@uhamka.ac.id

ABSTRACT

Allicin is one of the components contained in garlic extract (*Allium sativum* L) and can easily be decomposed. To improve the chemical stability of allicin, a garlic extract was formulated in a phytosome system. Phytosomes, which are colloidal systems, are susceptible to ostwald ripening, which can result in an increase in particle size distribution. Changes in the size distribution indicate that the system is physically unstable. This study aimed to test the physical stability of the garlic extract phytosome stored at three different temperatures for four weeks. Garlic extract phytosomes were prepared by the thin layer hydration method using garlic extract and lecithin at the same concentration of 4.5%. Furthermore, the phytosomes were stored at 4˚C, 25˚C, and 40˚C for four weeks. Every week, a physical evaluation was carried out (organoleptic, pH, density, particle size, polydispersity index, and zeta potential). The data obtained were analysed statistically using the Friedman test. The phytosome's organoleptic result showed separation at 4˚C and 40˚C, starting from the second week. The average particle size of phytosomes was 214.3 nm, the zeta potential value was -29.08 mV, and the polydispersity value was 0.46. The results of statistical analysis showed that the Asymp.Sig < 0.05 indicated that the particle size, zeta potential, polydispersity index, pH values, and density were significantly different at each week and storage temperature. Conclusion based on study indicated a decrease in the physical stability of phytosomes, especially those stored at extreme temperatures (4˚C and 40˚C).

Keywords: *Allicin, garlic extract, phytosomes, particle size, zeta potential, stability*

Supporting Agencies : Source of research funding from the Lemlitbang Uhamka (Research and Development Institute of Muhammadiyah Prof. Dr HamkaUniversity) with contract number 742/F.03.07/2019

Indexing : Pharmaceutical

OP-012

APOPTOSIS INDUCTION ACTIVITY OF VOACANGA FOETIDA (BLUME) ROLFE BARK ISOLATE COMPOUNDS AGAINST T47D BREAST CANCER CELLS

Adriani Susanty[1]*, Dyan Febriyan[1], Ratih Sri Rezki[1], Neni Frimayanti[1], Erniza Pratiwi[1], Dira[2], Fatma Sri Wahyuni[2], Dahriyanus[2]

[1]Sekolah Tinggi Ilmu Farmasi Riau, Pekanbaru, 28293, Riau, Indonesia
[2]Fakultas Farmasi, Universitas Andalas, Limau Manis, Padang, Indonesia
*Corresponding author. Email: adrianisusanty@stifar-riau.ac.id

ABSTRACT

Voacanga foetida (Apocynacea) is one of the plants that contains high levels of alkaloids, as our previous research results succeeded in isolating three alkaloid isolates namely VFB-DB 1.1, VFB-DB 2.1 and VFBDB 2.2 and these three compounds have strong cytotoxic activity with IC50 values of 8.9; 15.29 and 3.53 µg/mL respectively. Apoptosis is a pathway of action mechanism of alkaloids in killing cancer cells in addition to cytotosic pathways. In this study, it is necessary to test the apoptosis induction activity of the three isolate compounds VFB-DB 1.1, VFB-DB 2.1 and VFB-DB 2.2 with the Double Staining method at concentrations of 1/2 IC50, IC50 and 2x IC50 to analyze the strength of these isolate compounds in killing cancer cells expressed in percentage apoptosis. The percentage results of apoptosis of these three isolates in a row are as follows: for VFB-DB 1.1 isolate compounds are; 71.38% (4.45 µg/mL);77.78% (8.9 µg/mL) and 81.84% (17.8 µg/mL), for VFB-DB2.1 isolates it was 64.52% (7.64 µg/mL); 71.56 (15.29 µg/mL); and 92.23% (30.58 µg/mL) and further for VFB-DB2.2 isolate compounds was 60.93% (1.77 µg/mL); 64.68% (3.53 µg/mL) and 70.02% (7.06 µg/mL) compared with doxorubicin were 36.43% (0.06 µg/mL); 42.58 % (0.13 µg/mL); and 45.48 % (0, 25 µg/mL) against T47D breast cancer cells. The results of this study concluded that the three isolates had the potential to kill breast cancer cells through the apoptosis pathway compared to the doxorubicin positive control.

Keywords: *Voacanga foetida, apoptosis, alkaloid, T47D*

OP-013

COMBINATIONAL EFFECTS OF ASAM KANDIS (GARCINIA COWA ROXB.) LEAVES ETHANOLIC EXTRACT AND DOXORUBICIN ON T47D BREAST CANCER CELL

Ifora Ifora[1,2]*, Fatma Sri Wahyuni[1], Dachriyanus Hamidi[1], Meri Susanti[1], Dira Hefni[1], Thesa Helmalia Putri[2], Rina Wahyuni[2]

[1]Faculty of Pharmacy, Andalas University, Kampus Limau Manis, 25163 Padang, West Sumatra, Indonesia,
[2]School of Pharmaceutical Science Padang (STIFARM Padang), West Sumatera, Indonesia, 25147
*Corresponding author. Email: Iforafo03@gmail.com

ABSTRACT

The aim of this research is to investigate the cytotoxic effects of ethanolic extract of *Garcinia cowa* leaves (EEGCL) in combination with doxorubicin (DOX) of breast cancer T47D cell lines. The combined cytotoxic effect of EEGCL and DOX was observed by MTT Assay. The combination index (CI) was calculated to determine the effect of the combination and was analyzed using Chou Talalay's method. Based on the MTT test, EEGCL showed concentration-dependent cytotoxic effects with an IC50 value of 49 µg/mL on T47D cells. EEGCL synergistically enhances the cytotoxic effect of DOX, with a CI value range of 0.4–0.9. These findings strongly suggest that EEGCL possesses potential synergistic effects that can be developed to enhance the anticancer efficacy of DOX and reduce the risks of chemotherapy use in highly metastatic breast cancer.

Keywords: *Cytotoxic, Synergism, Garcinia cowa, Doxorubicin, Combination Index, Chou Talalay's method*

OP-014

FORMULATION AND PHYSICAL STABILITY OF HAIR TONIC ETHANOL EXTRACT OF KATUK LEAVES(SAUROPUS ANDROGYNOUS (L.) MERR)

Nurbaiti[1]*, Ayu Rahmawati[1], Salsa Oriendhini[1]

[1]Department of Pharmacy, Faculty of Mathematics, Natural Sciences and Health, Universitas Muhammadiyah Riau, Pekanbaru 28156, Indonesia
*Corresponding author. Email: nurbaiti@umri.ac.id

ABSTRACT

Katuk leaves (*Sauropus androgynus* (L.) Merr) contain provitamin A and vitamin E, flavonoids and ascorbic acid, which help hair growth. This study aims to determine the stability level of hair tonic preparations of ethanol extract from katuk leaves. The method used in this study is the cycling test method. This study made a hair tonic formulation with 2.5% ethanol extract of katuk leaves with a variation of 96% ethanol concentration of 35 ml and 60 ml. The stability parameters tested include organoleptic, pH, viscosity, specific gravity, and homogeneity. The pH test results range from 4.4 to 5.3; this pH value follows the Indonesian National Standard (SNI). The viscosity test ranged from 0.59-0.69; this pH value complies with the Indonesian National Standard (SNI). The specific gravity test results ranged from 1.02-1.04, and this particular gravity value was not the theory of specific gravity of hair tonic less than 1. The homogeneity test results showed that the hair tonic experienced precipitation and was not homogeneous. Furthermore, the hedonic test showed that the panellists preferred the negative control preparation, then the hair tonic preparation of katuk leaf ethanol extract with 96% ethanol variation of 60 ml and finally, the hair tonic preparation of katuk leaf ethanol extract with 96% ethanol variation of 35 ml.

Keywords: *Hair tonic, katuk leaves, hair tonic evaluation, hair growth*

OP-015

FORMULATION AND EVALUATION OF NANOEMULGEL FROM SONNERATIA CASEOLARIS LEAF EXTRACT

Eka Siswanto Syamsul[1'2], Dwi Lestari[3], Salman Umar[1], Fatma Sri Wahyuni[1], Ronny Martien[4], Dachriyanus Hamidi[1]*

[1]Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia
[2]Department of Pharmacy, Sekolah Tinggi Ilmu Kesehatan Samarinda, Samarinda, Indonesia
[3]Faculty of Pharmacy, Universitas Muhammadiyah Kalimantan Timur, Samarinda, Indonesia
[4]Faculty of Pharmacy, Universitas Gadjah Mada, Yogyakarta, Indonesia
*Corresponding author, Email: dachriyanus@phar.unand.ac.id

ABSTRACT

Extract from *Sonneratia caseolaris* leaves has anti-aging properties and protects the skin from various skin conditions caused by free radicals, such as dryness and wrinkles causing premature aging. Nanoemulgel extract from *Sonneratia caseolaris* leaves is useful as an anti-aging agent because of its high stability and small particle size which is effective for penetrating the active ingredients into the skin. The objective of this study was to make optimal formulation for *Sonneratia caseolaris* leaf extract using the Self-Nanoemulsifying Drug Delivery System (SNEDDS) method and evaluating the preparation. Nanoemulgels in 12 different formulations. The oil-in-water nanoemulsion is prepared using castor oil (Ricini oil) as the oil phase, Tween 80 as the surfactant, and PEG 400 as the cosurfactant, using high-speed homogenization. The nanoemulgel is created by mixing the nanoemulsion with carbopol, HPMC, and TEA, resulting in a homogeneous milky white gel. Each formula undergoes testing for various physical properties, including organoleptic characteristics, homogeneity, pH, viscosity, spreadability, and adhesion.

The composition of each formula is determined through an optimization process using the Simplex Lattice Design method with Design Expert 10 software. Experimental results and predictions from the Simplex Lattice Design method. The optimum formula for Nanoemulgel containing *Sonneratia caseolaris* leaf extract includes variations of Ricini oil (1), Tween 80 (8.39), and PEG 400 (7.61) for every 100 grams of nanoemulgel. The nanoemulsion has a particle size of 167.83±0.67, a Polydispersity Index (PDI) of 0.247±0.01, and a potential zeta value of -16.67±1.15. The physical properties test for the nanoemulgel containing *S.caseolaris* leaf extract reveals a homogeneous gel with a pH value of 6.19 ± 0.002, a viscosity of 253.96±4.97 dPa.S, a spreadability of 8.44±0.10 cm2, and an adhesion time of 2.90±0.05 seconds. Nanoemulgel remains stable during three test cycles, including organoleptic evaluation, homogeneity, pH measurement, adhesion, and viscosity, except for the spreadability, which shows instability.

Keywords : *Nanoemulgel, Sonneratia caseolaris, SNEEDS, antiaging*

Supporting Agencies : Source of research funding by Direktorat Ristek dan Pengmas, Dirjen Dikti Ristek, Kemdikbud Ristek through Doctoral Disertation Research with main contracts no 012/E5/:PG.02.00.PL/2023,and LPPM UNAND main contracts no T/16/UN16.19/PT.01.03/PPS-PDDKesehatan/2023

Indexing : Pharmaceutical Technology

OP-016

ANTIOXIDANT ACTIVITIES OF ETHANOL EXTRACTS, N-HEXANE FRACTIONS, ETHYL ACETATE FRACTIONS, AND WATER FRACTIONS FROM FIVE VARIETIES OF FICUS CARICA LEAVES

Meilinda Mustika[1]*, Boy Chandra[1], Sestry Misfadhila[1], Muhammad Haris[1], Dinda Permata[1], Muhammad Sufuad[1], Anisa Megawati[1]

[1]School of Pharmaceutical Science Padang, West Sumatra, Indonesia
*Corresponding author. Email: meipiai146@stifarm-padang.ac.id

ABSTRACT

Ficus carica has many varieties. The leaves contain secondary metabolites which can be used as a source of antioxidants to inhibit free radicals. This study aims to examine the antioxidant activity of ethanol extract, n-hexane fraction, ethyl acetate fraction and water fraction of five varieties of *Ficus carica* leaves namely Panache Tiger, Red Palestine, Green Jordan, LSU Gold, and Bajihong. Antioxidant testing was carried out using the DPPH (2,2 diphenyl-1-pycrylhydrazyl) method. Sample solutions were prepared in five concentrations, namely 4, 8, 12, 16, and 20 µg/mL. UV-Vis double beam spectrophotometry measured the absorbance in each sample solution. The IC50 values of the ethanol extract *Ficus carica* leaves Panache tiger, Red Palestine, Green Jordan, LSU Gold, and Bajihong varieties were 19.4132; 19.0150; 17.5623; 19.7136; 22.8838 µg/mL, n-hexane fraction were 84.6393; 84.5263; 83.8990; 85.3026; 87.7560 µg/mL, ethyl acetate fraction were 20.3750; 18.7451; 18,1990; 22.5833; 27.8047 µg/mL and water fraction were 19.7137; 18.2529; 15.9352; 20.6544; 22.9029 µg/mL. The antioxidant activity of the ethanol extract, ethyl acetate fraction, and water fraction of the five varieties were in the very strong category, while the n-hexane fraction was in the strong category. It can be concluded that *Ficus carica* leaves of the Green Jordan variety have the highest antioxidant activity, followed by Red Palestine, Panache Tiger, LSU Gold, and Bajihong.

Keywords:

Indexing : Pharmaceutical Chemistry

OP-017

THE IMPACT OF DIURETIC THERAPY TO THE CLINICAL OUTCOME ON PATIENTS CONGESTIVE HEART FAILURE WITH OR WITHOUT HYPOALBUMINEMIA IN DR. M. DJAMIL HOSPITAL PADANG

Rabiul Fajri[1]*,Najmiatul Fitria[1], Armenia[1]

[1]Departement Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia
*Corresponding author. Email: armenia@phar.unand.ac.id

ABSTRACT

Congestive heart failure (CHF) causes water retention resulting in edema, this condition will be worsened by hypoalbuminemia. Therefore, diuretic therapy is needed to reduce fluid retention. The purpose of this retrospective cross-sectional study was to determine the pattern of diuretic therapy and the relationship between sociodemographics, albumin level, NYHA classification, and diuretic therapy to the clinical outcome (SBP, DBP, HR, Na+, K+, CL-) of CHF patients with or without hypoalbuminemia at RSUP Dr. M. Djamil Padang. An amount of 64 CHF patient medical record. Data was presented as presentage change and analysed using Kruskal Wallis and Mann Whitney test and significant was taken at $p<0,05$ with 95% confident interval. The results show that female patients had a greater reduction in sodium levels than male patients ($p<0.05$). Then the heart rate of CHF patients without hypoalbuminemia treated with diuretic decreased significanly compared to hypoalbuminemia patients ($p<0.05$). Potassium-sparing diuretics tend to provide greater systolic pressure decrease compared to other diuretics in congestive heart failure patients ($0.05<p<0.1$). Hypoalbuminemia condition showed a decrease in diastole blood pressure larger than non-hypoalbuminemia in congestive heart failure patients ($0.05<p<0.1$).

Keywords: *Congestive heart failure, hypoalbuminemia, diuretics, electrolytes, blood pressure, heart rate*

Indexing : Clinical Pharmacy

OP-018

ANTI-INFLAMMATORY ACTIVITY OF AN ETHANOL EXTRACT OF PUCUK MERAH (SYZIGIUM MYRTIFOLIUM WALP.) IN VIVO

Nursyafni[1], Ayu Rahmawati[1]*, Lusi Indriani[1], Dicki Hamed Ashari[1]

[1]Department of Pharmacy, Faculty of Mathematics, Natural Sciences and Health, University of Muhammadiyah Riau, Pekanbaru 28291, Indonesia
*Corresponding author. Email: rahmawatiayu@umri.ac.id

ABSTRACT

Compared with classical Utilization of medicinal plants with anti-inflammatory properties, it needs to be done to find alternative treatments with relatively more minor side effects, such as pucuk merah (*Syzygium mirtifolium* walp.). This study aims to determine the effective dose of ethanol extract of pucuk merah as an anti-inflammatory in 30 male white rats of the Wistar strain. Testing the extract's anti-inflammatory effect was measured by measuring the edema volume on the soles of the rats' feet after being induced with 1% carrageenan with a pletismometer. The test animals were divided into six treatment groups, namely group 1 negative control (Na CMC 1%), group 2 positive control (Na Diclofenac 50 mg/KgBW), group 3 (dose of pucuk merah leaves extract 75 mg/KgBW), group 4 (dose of pucuk merah leaves extract 100 mg/kgBW), and group 5 (dose of pucuk merah leaves extract 125 mg/kg BW), with observation times of 30, 60, 90, 120, 150, and 180 minutes. The results showed that rats in group 5 with a dose of pucuk merah (125 mg/kgBW) had the best anti-inflammatory effect, with an anti-inflammatory potential of 97% compared to diclofenac sodium.

Keywords: *Anti-inflamatory, Pucuk Merah, Syzygium mirtofolium walp., In Vivo*

Supporting Agencies: The researcher would like to thank the Muhammadiyah Central Leadership Research and Development Higher Education Council for the RISETMU grant Batch VI that funded this research.

Indexing: Pharmacology

OP-019

ANTIBACTERIAL ACTIVITY OF SOME MANGROVE LEAVES OF ETHANOL EXTRACT FROM SIAK, RIAU PROVINCE, INDONESIA

Ayu Rahmawati[1], Nursyafni[1]*, Nurbaiti[1], Lusi Indriani[1], Tri Nova Lovena[1], Kinanti Bahi Khairiah[1], Indri Aprilia[1]

[1]Departement of Pharmacy, Faculty of Mathematics, Natural Sciences and Health, University of Muhammadiyah Riau, Riau-Indonesia 28290

*Corresponding author. Email: nursyafni@umri.ac.id

ABSTRACT

Mangrove plantsare high in secondary metabolites and are used for natural medical purposes by coastal populations. The goal of this study was to look at the antibacterial activityof an ethanol extract of the mangrove leaves of *Scyphipora hydrophylaceae* C.F.Gaertn., *Lumnitzera littorea* (Jack) Voigt, and *Alvicennia alba* Blume against Gram-positive bacteria *Staphylococcus aureus* and Gram-negative bacteria *Escherichia coli*. The disc diffusion method was utilized in this study, using various concentrations of ethanol extract of mangrove leaves, including 15%, 10%, 5%, 2.5%, 1.25%, and 0.625% w/v, as well as cefadroxil as a positive control for bacteria and DMSO as a negative control. The ethanol extracts of mangrove leaves *Scyphipora hydrophylaceae* C.F.Gaertn and *Lumnitzera littorea* (Jack) Voigt had a strong response to *Escherichia coli* bacteria with diameters of inhibition of 13.9 mm and 13.63 mm, respectively, and had a moderate response to bacteria *S. aureus* at a concentration of 15% with DDH of 9.13 mm and 10.03. The *Alvicennia alba* Blume mangrove had no antibacterial effect against the two test bacteria. Finally, an ethanol extract of *Scyphipora hydrophylaceae* C.F.Gaertn and *Lumnitzera littorea* (Jack) Voigt mangrove leaves inhibits the growth of *Staphylococcus aureus* and *Escherichia coli* bacteria.

Keywords: *Antibacterial activity,antibiotics, Mangroves, Screening*

Supporting Agencies: The researchers would like to thank the Council of Higher Education, Research, and Development, Muhammadiyah Central Management, for the grantfrom RISETMU that funded this research.

Indexing: Microbiology

OP-020

THE EFFECTIVITY OF ETHANOL EXTRACT OF SMALLANTHUS SONCHIFOLIUS PATCH ON MICROSCOPIC PARAMETERS OF GANGRENE WOUNDS OF WHITE RATS

Lucia Hendriati[1]*, Putu Ena Sasmita[1], Putu Dyah Ayu Sri Maha Laksmi[1], Iwan Sahrial Hamid[2], Teguh Widodo[1], and Suryo Kuncorojakti[2]

[1]Faculty of Pharmacy, Widya Mandala Catholic University, Surabaya, Indonesia
[2]Faculty of Veterinary Medicine, Airlangga University, Surabaya, Indonesia
*Corresponding author. E-mail: luciahendriati@gmail.com

ABSTRACT

Complications of uncontrolled diabetes mellitus are angiopathy and neuropathy which lead to gangrene. Aerobic and anaerobic bacteria cause infection in gangrenous wounds. Insulin leaves (*Smallanthus sonchifolius*) contain flavonoids and sesquiterpene lactones as antidiabetic and antibacterial. The aim of this study was to determine the effectivity of *Smallanthus sonchifolius* leaves ethanol extract patches on gangrene wounds of diabetics white rats with parameters of PMN cells, monocytes, macrophages, fibroblasts, and collagen. White rats were induced with alloxan to form diabetic and injected with *Staphylococcus aureus* in the plantar area as a trigger for gangrenes. The effectivity test of *Smallanthus sonchifolius* extract patch was carried out in 4 groups of gangrene wounds rats: negative control (patch without *Smallanthus sonchifolius*), positive control (Bevalex® cream), P1 (*Smallanthus sonchifolius* patch without Tween-60) and P2 (*Smallanthus sonchifolius* patch with enhancer Tween-60). The number of PMN cells, macrophages, fibroblasts, and collagen were observed microscopically on day 7 and day 14. The average results of negative control; positive control; P1 and P2 on the day 14 respectively were, PMN 10,67±0,577; 5,67±0,577; 5,33±0,577; 4,67±0,577, monocytes 10,67±0,577; 8,00±1,732; 7,00±1,000; 5,67±1,155, macrophages 11,67±0,577; 6,00±1,000; 5,67±1,155; fibroblasts 78,33±23,714; 224,67±15,822; 251,67±15,695; 261,67±19,218 and collagen thickness 341,251±11,198; 421,314±15,819; 440,880±16,045; 5,67±1,155. The results showed that the *Smallanthus sonchifolius* patch reduced the number of PMNs, monocytes and macrophages but increased the fibroblasts and collagen with a non-significant difference compare the positive control. The ethanol extract patch of *Smallanthus sonchifolius* was effective in gangrene wounds healing on diabetics rats.

Keywords: *Smallanthus sonchifolius; patch; ethanol extract, gangrene, diabetic rats*

Indexing : Pharmacology

OP-021

ROSELLA FLOWER (HIBISCUS SABDARIFFA. L) AS AN ANTI-DIABETES: ETHYL ACETATE FRACTION EFFECT TO PLASMA MDA, TNF-A PLATELET AND BLEEDING TIME ON DIABETIC RATS

Armenia[1]*, Milla Maulina[1], Afni Rahmatika[1], Rahmad Abdillah[1] and Netty Suharti[1]

[1]Faculty of Pharmacy, Universitas Andalas, Limau Manis 25163, Padang, West Sumatera, Indonesia
*Corresponding author. Email: armenia@phar.unand.ac.id

ABSTRACT

Uncontrolled diabetes mellitus will lead to various complications and increased mortality. Rosella flower calyx (*Hibiscus sabdariffa* .L) have antioxidant activity and able to control metabolic disorders. The objective of this study is to evaluate the potency of the ethyl acetate fraction of rosella calyx (RCE) to the plasma malondialdehyde (MDA), Tumor Necrosis Factor-α (TNF-α), platelets and bleeding time on streptozotocin (STZ)-induced diabetic rats. The rats were grouped into negative, positive controls (glybenclamide) and groups treated with RCE at doses of 100 and 200 mg/kg of BW respectively. The drugs were given once a day every day for 5 days. The plasma levels of MDA (TBARS), TNF-α (ELISA), platelets and bleeding time were determined on day 1, 3, and 5 days after drug administration. Data were analyzed using two-way ANOVA continued with Duncan's multiple range T-test. Significance was taken at a ≥95% confidence interval. The results showed that the levels of plasma MDA, TNF-α, platelets in diabetic rats were significantly lower ($p<0.05$) than the control group with a longer bleeding time ($p<0.1$). The use of the fraction for 5 days caused a greater decrease in MDA levels ($p<0.05$) but no significantly changed in TNF-α ($p>0.1$) while platelets tended to decrease with a longer bleeding period ($P<0.1$). These indicated that the ethyl acetate fraction of rosella calyx is effective in reducing levels of MDA, TNF-α and plasma platelets and prolonging the bleeding time of STZ-induced diabetes mellitus rats.

Keywords: *Hibiscus sabdariffa .L, MDA, TNF-α, platelets count, bleeding time*

Supporting Agencies : Source of research funding by Faculty of Pharmacy Universitas Andalas in 2023 with number of contract T/18/UN16.19/PT.01.03/2023.

Indexing : Pharmacology

OP-022

EFFECT OF QUERCETIN AND AVOBENZONE CONCENTRATION ON PHYSICAL CHARACTERISTIC AND IN VITRO ACTIVITY OF SUNSCREEN

Budipratiwi Wisudyaningsih[1]*, Kuni Zu'aimah Barikah[1], Fernanda Indah Lita[1]

[1]Herbal Drug Innovation Research Group, Faculty of Pharmacy, University of Jember, Indonesia.
*Corresponding author. Email: wisudyaningsih@unej.ac.id

ABSTRACT

Quercetin is a flavonoid compound that has great potential activity, one of which is a chemical absorber of ultraviolet (UV) radiation, especially UV B radiation. The objective of the present study was to optimize quercetin as a UV B absorber combined with avobenzone as a UV A absorber in sunscreen cream formulation. Optimization was carried out by factorial design method using Design Expert 11.0 Software, with viscosity, pH, Sun Protection Factor (SPF) value, Percent of Erythema Transmission (% TE), and Percent of Pigmentation Transmission (% TP). The results showed that the quercetin factor was decreasing viscosity, pH, % TE, and % TP value but increasing SPF value of the formulation. Avobenzone factor affected the increase of viscosity, pH, and SPF value but decreased the % TE and TP value. The interaction of quercetin and avobenzone significantly affected decreasing the viscosity and pH value but increased the SPF< % TE, and % TP value. Evaluation of optimum formula obtained by the overlay contour plot on the software resulting viscosity cream at 338,33 dPas, pH value at 5,40; SPF value at 33,31; % TE at 2,62x10-3 % and % TP at 1,56x10-5 %.

Keywords: *sunscreen, quercetin, avobenzone, factorial design*

OP-023

TREATMENT DURATION AND DRUG REGIMEN RELATIONSHIP WITH SIDE EFFECTS INCIDENCE IN DRUG-RESISTANT TUBERCULOSIS (DR-TB) PATIENTS AT PULMONARY HOSPITAL

Lusi Indriani[1]*, Gita Iftitah Renitia[2], Lusi Agus Setiani[2]

[1]Department of Pharmacy, Faculty of Mathematic and Natural Science and Medical, University of Muhammadiyah Riau, Pekanbaru, Indonesia
[2]Department of Pharmacy, Faculty of Mathematic and Natural Science, University of Pakuan, Bogor, Indonesia
*Corresponding author. Email: lusi.apoteker@gmail.com

ABSTRACT

The bacteria Mycobacterium tuberculosis causes DR-TB (Drug-Resistant Tuberculosis); excessive use of drugs can result in drug resistance with various side effects. This study aims to analyze the relationship between the treatment duration and drug regimen with side effects incidence in DR-TB Patients at Pulmonary Hospital Dr. M. Goenawan Partoidigdo (RSPG) Bogor. This is a non-experimental study with a cross-sectional design. Subjects were selected with purposive sampling methods based on inclusion and exclusion criteria. The research showed that DR-TB patients mainly were male (50.2%) with productive age (46.1%). The side effect incidence was gastrointestinal primary disorders such as nausea (55.1%). The use of standard conventional drug regimens mostly in Z, E, Eto, Km, Lfx, Cs (Pyrazinamide, Ethambutol, Etionamid, Kanamycin, Levofloxacin, Cycloserine) of 51.4%, and treatment duration primarily for 9-24 months (75.3%). The chi-square analysis showed no significant relationship between the treatment duration and incidence of side effects (p-value of 0.174). At the same time, there was a meaningful relationship between the drug regimen (short-term, long-term, and conventional standard regimen) and the side effects incidence (p-value of 0.042).

Keywords: DR-TB Patients; Side Effects Incidence; Treatment Duration; Drug Regimen

Indexing : Pharmacology and Clinical Pharmacy

OP-024

CYTOTOXIC FRACTION OF UNCARIA NERVOSA LEAVES AND ITS CELL MIGRATION AND APOPTOSIS EFFECT OF MCF-7 CELLS

Noveri Rahmawati[1]*, Dachriyanus[1], Nor Hadiani Ismail[2], Fatma Sri Wahyuni[1]

[1]Faculty of Pharmacy, Andalas University Indonesia,
[2]Atta-Ur- Rahman Institute for Natural Product Discovery (AurRins)Universiti Teknologi MARA Selangor, Malaysia
*Corresponding author. Email: noverirahmawati@umri.ac.id

ABSTRACT

Objective: *Uncaria nervosa* Elmer is a medicinal plant distributed in Indonesia, New Guinea and the Western Pacific. Traditionally, this plant is used for cancer. This study aims to determine the cytotoxic activity, cell migration and apoptosis of n-hexane, ethyl acetate and butanol fractions in MCF-7 breast cancer cells.
Methods: The ethanol extract of *Uncaria nervosa* Elmer leaves was fractionated using a separating funnel. Fractionation uses solvents with varying polarities, n-hexane, ethyl acetate and butanol. The three fractions were tested for their cytotoxic activity by the MTT assay method. The concentrations of the fractions were 100, 10, 1 and 0.1 µg/ml. The effect of inhibiting cell migration on fractions using the scratch wound healing method was observed at 0, 24 and 48 hours and the apoptotic effect was observed using the double staining method at 48 hours.
Results: The results showed n-hexane and ethyl acetate fractions have IC50 values 31,44 and 16,422 µg/ml, respectively and the butanol fraction had no activity on MCF-7 cells at a concentration of 100 µg/ml.Wound healing assays explained the potency of fraction to decrease the cell migration after 24 hours, and especially for the ethyl acetate fraction, the percentage of cell coverage remained low after 48 hours of incubation. Apoptosis effect of the fraction of the double staining test results showed MCF-7 cells experiencing yellow and orange fluorescence .
Conclusion: The n-hexane and ethyl acetate fractions had moderate and strong cytotoxic activity, were able to inhibit cell migration and could induce death of MCF-7 breast cancer cells by apoptosis.

Keywords: *Uncaria nervosa Elmer, MTT assay, cell migration, scratch wound healing method, apoptosis, double staining method*

OP-025

OPTIMIZATION OF COLLAGEN EXTRACTION CONDITIONS FROM MILKFISH (CHANOS CHANOS) SCALE AS AN EMULSIFIER

Sudrajat Sugiharta[1]*, Devia Setyaningsih[1], Dinda Aisyah[1], Dikdik Caesar Barkah[1]

[1]Faculty of Pharmacy, Buana Perjuangan University, Karawang, Indonesia,
*Corresponding author. Email: sudrajat.sugiharta@ubpkarawang.ac.id

ABSTRACT

Collagen production mostly comes from mammals such as cows and pigs, which is a problem due to the risk of spreading infectious animal diseases. Recently, collagen produced from the scales of milkfish (*Chanos chanos*) has been known to be an alternative to replace raw materials for collagen from mammals. It is necessary to optimize collagen production through the extraction of milkfish scales, as well as researching the potential of the collagen produced as an emulsifier. This research aims to determine the effect of acetic acid and pepsin concentrations in milkfish scales' collagen extraction process on differences in emulsifier quality. The results of this research are that the isolated collagen meets the requirements for proximate analysis (water content, ash content, protein content and fat content). SDS Page analysis shows that the collagen produced is a collagen peptide with a molecular weight of 100 kDa. All treatment groups in this study could act as emulsifiers regarding emulsion pH test analysis, homogeneity, viscosity, percent transmittant, and Emulsifying activity (EA). Based on this analysis, collagen extracted with a variable concentration of 1 M acetic acid with 1% pepsin is known to produce the most stable emulsion.

This research concludes that collagen isolated from all treatment groups in this study has the ability as an emulsifier, where treatment group 1 M acetic acid with 1% pepsin is known to produce the most stable emulsion and meet the requirements for a good emulsion.

Keywords: *collagen peptides, milkfish scales, emulsifier, SDS page, percent transmittant, and Emulsifying activity (EA)*

Supporting Agencies: Source of research funding by The Ministry of Education, Culture, Research, and Technology Indonesia 2022.

Indexing: Pharmaceutical technology

OP-026

VIABILITY STUDY OF TAPAK LIMAN (ELEPHANTOPUS SCABER LINN) LEAVES TOWARD RAW 264.7 CELLS

Mega Yulia[1,2], Yufri Aldi[3], Hansen Nasif[3], Fatma Sri Wahyuni[3], Dachriyanus[3]*

[1]Akademi Farmasi Imam Bonjol, Bukittinggi, Indonesia 26111
[2]Post Graduate Student, Faculty of Pharmacy, Andalas University, Padang, Indonesia 25163
[3]Faculty of Pharmacy, Andalas University, Padang, Indonesia 25163
*Corresponding author. Email: dachriyanus@phar.unand.ac.id

ABSTRACT

Tapak liman (*Elephantopus scaber* Linn) is a plant that is easily found in Indonesia which is traditionally used for various treatments. The chemical constituents of the *E. scaber* plant are sesquiterpenes, triterpenoids, steroids, flavonoids, tannins, and saponins. It is necessary to determine the safety of using this plant, by looking the effect of this plant's leaf extract on cell growth by carrying out a viability study. A viability study was carried out on raw 264.7 cells. Cells were cultured on 96 well plates treated with ethanol extract of E. scaber leaves with concentrations of 100, 50, 25, 12.5, 6.25 and 1 µg/ml. Cells were incubated for 48 hours at 37°C, 5% CO2 and then given 100 µl MTT solution 0.5 mg/ml in PBS (Phosphate Buffer Saline) for 4 hours. Formazan crystals formed were dissolved with 100 µl DMSO, and absorbency was measured using a microplate reader. Cell viability was obtained in the E. scaber leaves ethanol extract, respectively, at concentrations of 100, 50, 25, 12.5, 6.25, and 1 µg/ml were 95.2, 129.3, 130.7, 133.2, 126.7 and 115.1 %. From this study, it can be concluded that E. scaber leaf extract was able to maintain cell viability > 80% at all test concentrations.

Keywords: *tapak liman, elephantopus scaber, MTT assay, raw 264.7 cells*

OP-027

TESTING THE EFFECTIVENESS OF HAIR GROWTH TONIC WITH COCOA BEAN EXTRACT ON MICE FOR PHYSICAL STABILITY AND ACTIVITY

Muhammad Alfian[1]*, Muhammad Nurul Hasanudin[1], Mochamad Luqni Maulana[1]

[1]Industry Halal Faculty, University of Nahdlatul Ulama Yogyakarta, Spesial Distric of Yogyakarta, Indonesia
*Corresponding author. Email: muhammadalfian@unu-jogja.ac.id

ABSTRACT

Cocoa is a highly valued plant due to its versatile uses, including being processed into cosmetic products. Our research aimed to determine the secondary metabolite content of cocoa beans, formulate them into a hair growth tonic, and test its physical stability and effectiveness on hair growth in mice. We extracted cocoa beans using the maceration method and conducted phytochemical screening. This extract was then used to create three formulations with different extract concentrations of 0.2%, 0.3%, and 0.5%, which were tested for physical stability, including organoleptic properties, homogeneity, pH, and specific gravity. Mice were divided into five treatment groups, and their hair growth was measured for three weeks. Results revealed that cocoa seed extract contains flavonoids, alkaloids, tannins, and phenolics. The formula with a 0.3% concentration of cocoa bean extract showed the best physical stability. Hair growth tests on mice showed no significant difference between the 0.3% and 0.5% cocoa bean extract formulas and the positive control in the second week. The 0.3% formula is the best for ensuring good physical stability and promoting hair growth in mice when used twice daily for two weeks.

Keywords: *Cocoa bean, Hair tonic, Hair growth*

OP-028

ANTIBACTERIAL ACTIVITY OF FUNGAL ENDOPHYTES ISOLATED FROM CYATHEA CONTAMINANS (HOOK) COPEL

Yulianis[1,2], Rustini[3], Agus Supriyono[4] and Dian Handayani[1]*

[1]Faculty of Pharmacy /Laboratory of Sumatran Biota, Universitas Andalas, Padang 25163, Indonesia
[2]Department of Pharmacy, STIKES Harapan Ibu Jambi, Jambi 36132, Indonesia
[3]Faculty of Pharmacy, Universitas Andalas, Padang 25163, Indonesia
[4]Research Center for Pharmaceutical Ingredient and Traditional Medicine, National Research and Innovation Agency (BRIN), Cibinong Science Center, Cibinong, Bogor, Indonesia
*Corresponding author. Email: dianhandayani@phar.unand.ac.id

ABSTRACT

This study evaluated the antibacterial activity of endophytic fungi from *Cyathea contaminants* (Hook) Copel collected from Kerinci, Jambi, Indonesia. The fungi were cultivated using Sabouraud Dextrose Agar + Chloramphenicol as growth media. Pure isolated fungus was grown on rice at 25°C–27°C for 3–4 days. The secondary metabolite of the fungus was extracted using ethyl acetate as solvent. The ethyl acetate extract of each fungus isolated was then tested for its antibacterial activity. The antibacterial activity of EtOAc extracts at 5% concentration was evaluated against some pathogenic bacteria, such as *Staphylococcus aureus*, *Escherichia coli*, and Methicillin Resistance *Staphylococcus aureus* (MRSA), using the agar diffusion method. This research yielded nineteen endophyte fungi from leaves, barks, and roots of Cyathea contaminans (Hook) Copel. Based on antibacterial activity screening results, four fungal strains (CBK3, CDK1, CDK4, and CAK2) were selected as active against *S. aureus* and MRSA with a zone of inhibition in the range of 15.08 ± 0.854 to 23.52 ± 0.87mm. In contrast, two fungi strains (CBK3 and CDK1) were active against *E. coli* with a clear inhibition zone of 19.755 ± 0.463 and 17.567 ± 0.743 mm, respectively. All active fungal isolates were identified macroscopically, microscopically, and molecularly. The fungus strains CBK3 and CDK1 was identical to *Paecilomyces subglobosus* CBK3 and *Penicillium citrinum* CDK1, respectively. The fungus strains CDK4 and CAK2 were comparable to *Aspergillus terreus* CDK4-CAK2. We concluded that four endophytic fungi of Cyathea contaminants may be a new source of antibacterial compounds. However, continued research is needed to prove it's bioactive.

Keywords: *Antibacterial activity, Cyathea contaminans (Hook) Copel, Paecilomyces subglobosus, Penicillium citrinum, Aspergillus terreus*

Supporting Agencies: This work was supported by the Kemenristek-Dikti Research Doctoral Dissertation Research Scheme (115/E5/PG.02.00.PL/2023).

Indexing: Pharmaceutical Chemistry

OP-029

RAPID DETECTION OF RAT MEAT ADULTERATION IN BEEF SAUSAGES USING FTIR-ATR SPECTROSCOPY AND CHEMOMETRICS FOR HALAL AUTHENTICATION

Dwi Lestari[1,2], Wirnawati Wirnawati[1,2], Eka Siswanto Syamsul[1,3], Suryati Syafri[1], Syofyan Syofyan[1], Abdul Rohman[4], Nancy Dewi Yuliana[5], Nor Kartini Bt. Abu Bakar[6], and Dachriyanus Hamidi[1]*

[1]Faculty of Pharmacy, Universitas Andalas, Padang Sumatera Barat 25175 Indonesia,
[2]Faculty of Pharmacy, Universitas Muhammadiyah Kalimantan Timur, Samarinda Kalimantan Timur 75124 Indonesia
[3]Sekolah Tinggi Ilmu Kesehatan Samarinda, Samarinda Kalimantan Timur 75124 Indonesia
[4]Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Universitas Gadjah Mada Yogyakarta 55281 Indonesia
[5]Department of Food Science and Technology, IPB University, 16680 Bogor, Indonesia
[6]Department of Chemistry, Faculty of Science, University Malaya, Malaysia
*Corresponding author. Email: dachriyanus@phar.unand.ac.id

ABSTRACT

Adulterating of food products is a big problem for mankind, especially for Muslims. Consuming halal food is an obligation for Muslims. Halal food is zero per cent of non-halal components in food products. This study aimed to employ FTIR-ATR spectroscopy combined with chemometrics for the analysis of rat meat adulteration in beef sausages. Lipid components in sausages were extracted using three extraction methods, namely Bligh and Dyer, Folch, and Soxhlet methods. The lipid components extracted were then analysed using FTIR-ATR spectroscopy, and their spectra obtained were used as variables during chemometrics modelling. Samples were prepared by mixing beef with adulterant of rat meat in the concentration range of 0-100% of rat meat. Each sample was scanned using FTIR attenuated total reflectance (ATR) spectroscopy in three replicates at the 4000-650 cm-1 wavenumber region. The absorbance values at wavenumbers regions of 3100-700 cm-1 were used to discriminate lipid components extracted by the Bligh Dyer, Folch, and Soxhlet Method with an accuracy level of 100%. The prediction of rat sausages was successfully determined using multivariate calibrations of Partial Least Square (PLS) and Principle Component Regression (PCR) using optimized conditions. FTIR-ATR spectroscopy coupled with chemometrics is a rapid and accurate method for detecting and quantifying rat meat in beef sausages for halal authentication.

Keywords: *Halal authentication, beef sausage, rat sausage, FTIR spectroscopy, chemometrics*

Supporting Agencies: Research Grant no 41/UN16.19/PT.01.03/Pangan-RKI Skema C (Mitra)/2023, May 15th, 2023.

Indexing : Pharmaceutical Chemistry

OP-030

PREPARATION OF LIQUID CRYSTAL FROM MULTICOMPONENT CRYSTALOF USNIC ACID AND N-METHYL-D-GLUCAMINE FOR TRANSDERMAL DRUG DELIVERY SYSTEM

Nola Rahmadasmi[1,2], Rini Agustin[1]*, Erizal Zaini[1]

[1]Faculty of Pharmacy, Andalas University, Indonesia
[2]Pharmacy Study Program, Fort De Kock University, Bukittinggi
*Corresponding author. Email: riniagustin74@gmail.com

ABSTRACT

Liquid crystal are a state of matter that is between the solid and liquid phases or mesophase, having flowing properties like a liquid but a dense structure like a crystal. Usnic acid has anti-inflammatory, anti-mitotoxic, anti-neoplastic, anti-bacterial and anti-mycotic activities . The low solubility of usnic acid in water is a limitation in its bioavailability, so efforts are needed to increase the solubility, namely the formation of multicomponent crystals with N- methyl -D- glucamine. Research purposes was to obtain multicomponent liquid crystals of usnic acid - N-methyl -D- glucamine using mesogen glyceryl monostearate and see the release profile. Liquid crystal characterized with using Polarized Light Microscopy (PLM) and evaluating the release of transdermal preparations using Franz diffusion. Results study indicates the formation of liquid crystals which are thought to be the lamellar phase using PLM. Release evaluation using Franz diffusion showed that liquid crystal preparations using multicomponent usnic acid crystals – N- methyl -D-glucamine as the active substance had the best release when compared with non-liquid crystal preparations.

Keyword: *liquid crystal ; lamellar phase; usnic acid ; multicomponent crystal; Franz diffusion*

OP-031

EFFECT OF MORINDA FRUIT EXTRACT (MORINDA CITRIFOLIA LINN) ON ULCERATIVE COLITIS DISEASE ACTIVITY INDEX AND COLON LESION MACROCOPY IN ACETIC ACID-INDUCED MICE

Tri Fitri Yana Utami[1'2]*, Muhammad Novrizal Abdi Sahid[3'4], Ediati Sasmito[3], Ika Puspita Sari[5]

[1]Fakultas Farmasi, Universitas Gadjah Mada, Yogyakarta, Indonesia, 55281.
[2]Departemen Farmakologi dan Farmasi Klinik, Fakultas Farmasi dan Teknologi, Universitas Al Irsyad Cilacap, Jl. Cerme, Cilacap, Jawa Tengah, Indonesia, 55584
[3]Departemen Kimia Farmasi, Fakultas Farmasi, Universitas Gadjah Mada, Jl. Sekip Utara, Yogyakarta, Indonesia, 555281
[4]Curcumin Research Centre, Fakultas Farmasi, Universitas Gadjah Mada, Jl. Sekip Utara, Yogyakarta, Indonesia, 555281
[5]Departemen Farmakologi dan Farmasi Klinik, Fakultas Farmasi, Universitas Gadjah Mada, Jl. Sekip Utara, Yogyakarta, Indonesia, 55281
*Corresponding author. Email: tri.fitri.yana.utami@mail.ugm.ac.id

ABSTRACT

Ulcerative Colitis (UC) is an inflammatory bowel disease that can develop into bowel cancer and will increase death if not handled properly. Treatment of UC is done by administering corticosteroids, immunosuppressants, and biological agents, but this can cause other diseases to emerge. *Morinda citrifolia* Linn contains flavonoid compounds that can provide preventive and therapeutic effects by reducing proinflammatory cytokines so it is thought to improve the condition of UC. This study was conducted to determine the effect of Morinda Fruit Extract (MFE) on UC in acetic acid-induced mice. MFE was obtained from the extraction of the maceration method using 70% ethanol solvent. UC induction was carried out in mice using 2% acetic acid. Mice were divided into 6 groups namely K1 (normal control); K2 (negative control); K3 (positive control); K4-K6 (Securely given EBM doses of 100 mg/kgBW, 200 mg/kgBW and 400 mg/kgBW.) Then the inflammatory response was observed with the scoring parameter assessing colitis disease activity index (DAI) (weight, stool consistency, and the presence of blood in the stool), macrocopies of colonic lesions, and the ratio of colonic weight/colon length. The results of this study indicate that MFE affects reducing the DAI UC score, macroscopic colonic lesions, and the ratio of colonic weight/colon length at doses of 100 mg/kgBW, 200 mg/kgBW, and 400 mg/kgBW where the dose of 400 mg/kgBW shows greater activity and showed a significant difference ($p<0.05$) compared to the negative control. MFE responds well to UC conditions when assessed by these parameters. Improvement of the inflammatory response in UC by MFE makes MFE a potential candidate for the treatment of UC.

Keywords: *Ulcerative Colitis, Morinda Fruit Extract, Acetic Acid, Disease Activity Index*

Indexing : Pharmacology

OP-032

QUANTIFICATION OF SINENSETIN IN CAT WHISKERS WITH HPLC

Fahrauk Faramayuda[1]*, Soraya Riyanti[1], Akhirul Kahfi Syam[1], Suryani[1], Jeremia Ankesa Sudijana[1]

[1]Faculty of Pharmacy Universitas Jenderal Achmad Yani. Cimahi. Indonesia. 401532
*Corresponding author. Email: fahrauk.faramayuda@lecture.unjani.ac.id

ABSTRACT

Sinensetin is the main compound in the cat's whisker plant. Sinensetin has antioxidant activity as an antioxidant, anti-obesity and anti-cancer. Validation of the method for determining sinensetin levels with HPLC was carried out to ensure that the method used in this study was accurate and could be used to determine sinensetin levels in cat's whisker extract. Validation of the HPLC method in this research includes accuracy, precision, linearity and specificity. The extracts used come from different extraction methods, namely maceration and reflux. Analysis was carried out using a reverse phase C18 column. The column temperature was maintained at 25 OC. The mobile phase consisted of a 0.1% formic acid solution and acetonitrile (60:40) with an isocratic elution system. The flow rate was 1 ml/min, and the injection volume was 20 µl. The validation of the HPLC technique yielded the following results: % recovery from accuracy of 98.37 3.44%; % RSD of precision 1.12%; % correlation coefficient of linearity 0.999. The sinensetin test yielded maceration values of 0.42 ± 0.006% and reflux findings of 0.30 ± 0.006%.The method for determining sinensetin levels has good accuracy, precision and linearity results. The method can be used to determine accurate sinensetin levels.

Keywords: *Sinensetin, Validation, HPLC, Orthosiphon aristatus (Blume) Miq., purple variety.*

Supporting Agencies : Ministry of Culture Education, and Technology with grant number 074/E5/PG.02.00. PL/2023

Indexing : Pharmaceutical Biology

OP-033

THE RELATIONSHIP BETWEEN THE LEVEL OF KNOWLEDGE ABOUT TRADITIONAL MEDICINE AND THEDEMOGRAPHIC CHARACTERISTICS OF THE SUMBERSUKO VILLAGE COMMUNITY, WAGIR DISTRICT, MALANGREGENCY

Mayang Aditya Ayuning Siwi[1]

[1]Institut Teknologi Sains Dan Kesehatan RS dr Soepraoen Malang
*Corresponding author. Email: mayangaditya51@gmail.com

ABSTRACT

Traditional medicine is still widely used to treat health problems. Knowledge is a very important factor in influencing the formation of a person's behavior. Based on the results of research that has been conducted, there are still many respondents who have low knowledge about traditional medicine. Sumbersuko Village is one of the villages in Wagir District, Malang Regency. Most of the village's residents are farmers and the area still has few health facilities. In particular, there are still no pharmacies, so many people still use traditional medicine to deal with complaints. This research is a type of descriptive research carried out by giving questionnaires to the public to measure the level of knowledge and determine the relationship between knowledge and demographic characteristics. Data analysis used univariate and bivariate which was processed using the Chi Square test to see the relationship between level of knowledge and demographic characteristics. The results of the univariate analysis showed that respondents with a good level of knowledge were 8.16%, a sufficient level of knowledge was 26.53% and a poor level of knowledge was 65.30%. The results of the bivariate analysis showed that there was no relationship between the level of knowledge and gender, education level, age, and there was a relationship between the level of knowledge and the respondent's occupation. The conclusion of this research is that the level of knowledge about traditional medicine is related to community employment.

Keywords: *Traditional medicine, demographic characteristics, knowledge*

OP-034

UNRAVELING THE POTENTIAL BENEFIT OF INDONESIAN JAMU IN METABOLIC SYNDROME VIA ANTIHYPERTENSIVE AND ANTIOXIDANT ACTIVITY IN RAT- INDUCED FRUCTOSE 10%

Aprilita Rina Yanti Eff[1]*, Hasniza Zaman Huri[2], Annisah Nurziah[1], Iqrila[1], and Hermanus Ehe Hurit[1]

[1]Departement of Pharmacy, Faculty of Health Sciences Universitas Esa Unggul, Jakarta 11510, Indonesia,
[2]Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmacy, Universiti Malaya, Malaysia
*Corresponding author. Email: aprilita.rinayanti@esaunggul.ac.id

ABSTRACT

High fructose intake can elevate blood pressure and oxidative stress through an imbalance between free radical production and antioxidant status, causing cardiovascular disorders. In Indonesia, jamu (herbal medicine) mainly treats chronic illnesses like hypertension. This research examined the antioxidant and activity of jamu by measuring blood pressure, SOD activity, GSH, and MDA levels in the kidneys and liver of Sprague-Dawley rats induced with a 10% fructose solution for ten weeks. Thirty rats were separated into six groups. Five animals made up each group: the jamu group at doses of 0.01, 0.02, and 0.03 grams per kilogram of body weight; the captopril group (PC); the negative control group (NC); and the normal control group (SC). 10% fructose was used to induce all groups except the healthy control group, and at weeks 9 and 10, each group received the appropriate therapy. Blood pressure and weight are measured every week. At the end of the 10th week, the rats were sacrificed for kidney and liver organ harvesting. In addition, SOD activity, MDA, and GSH levels were measured. Two weeks of treatment for jamu resulted in a reduction in systolic and diastolic blood pressure. Comparing to the PC revealed no significant difference ($p > 0.05$), and there was no significant difference between A2 and PC ($p > 0.05$). Administration of jamu increased SOD and GSH and lowered MDA levels, but not significantly from the PC ($p > 0.05$). The findings demonstrated that giving jamu to rats for two weeks showed antihypertensive activities and antioxidant effects on the kidneys and liver of rats.

Keywords: *jamu, antihypertensive, SOD, MDA, GSH*

Supporting Agencies : The authors are thankful to the Ministry of Higher Technology and Education for Funding this research through Hibah Penelitian Dasar Unggulan Perguruan Tinggi 2020

Indexing : Pharmacology

OP-035

ROLL ON ANTI-INFLAMMATORY ESSENTIAL OIL BASIL LEAVES (OCIMUM SANCTUM L.)

Eka Desnita[1,2]*, Yahdian Rasyadi[2], Almahdy A[1], Annisa Destika Nanda[2]

[1]Faculty of Pharmacy, Andalas University, Padang
[2]Departement of Clinical Pharmacy, Faculty of Health Science, Baiturrahmah University, Padang
*Corresponding author. Email: desnitaeka@gmail.com

ABSTRACT

Objective: Basil (*Ocimum sanctum* L.) is an aromatic plant that contains chemical compounds that are known to have anti-inflammatory activity
Methods: The anti-inflammatory test used uses an in vitro stabilization method for red blood cells (erythrocytes) with a concentration range of basil leaf essential oil of 15% -20%.
Results: The concentration of basil leaves is able to stabilize the membrane of red blood cells. At a concentration of 15% shows the smallest stabilization ability of 43.93%. While at a concentration of 20% showed the greatest stability ability of 64.60%, and at a concentration of 25% experienced a decrease in stability of 61.18%, however, it was not significantly different from other formulas.
Conclusion: The effect of roll on aromatherapy essential oil basil leaves (*Ocimum sanctum* L.) on anti-inflammatory activity with the method of stabilizing red blood cell membranes, in the concentration range of basil leaf essential oil 15-25%.

Keywords: *Roll on, anti-inflammatory, basil leaf essential oil, aromatherapy*

OP-036

ANTIMICROBIAL ACTIVITIES SCREENING OF ENDOPHYTIC FUNGI ISOLATED FROM GRAPTOPHYLLUM PICTUM L. GRIFF.

Rahmad Abdillah[1], Fitri Rachmaini[1], Anzharni Fajrina[2], Cantika Rora Putri[2] and Aried Eriadi[2]*

[1]Departement of Pharmacology and Clinical Pharmacy, Universitas Andalas, Padang, West Sumatra, Indonesia
[2]Departement of Biology Pharmacy and Natural Product STIFARM Padang, West Sumatra, Indonesia
*Corrresponding author. Email: aried.eriadi@stifarm-padang.ac.id

ABSTRACT

Endophytic fungus secondary metabolites often demonstrate potential pharmacological activity against various diseases. This study aims to isolate fungi from *Graptophyllum pictum* and test for its antibacterial activity. Potato dextrose agar (PDA), a common fungus culture medium, was utilized. The streak plate method was used to isolate fungi. Each pure fungal isolate was grown on rice media for 4-8 weeks at room temperature before being extracted with ethyl acetate. Ethyl acetate extract of all isolated fungi was tested for antimicrobial activity against pathogenic microbes *Staphylococcus aureus* (SA) ATCC 2592 and *Escherichia coli* (EC) ATCC 25922 using the disk diffusion method. Six pure fungal isolates were successfully obtained from *G. pictum*. Only two isolated fungi showed antimicrobial activity. WD1 and WD2 showed antimicrobial activity against SA with a diameter of inhibition zone 13.90 mm ± 0.56; 13.92 mm ± 0.83 and EC, 11.97 mm ± 0.22; 11.86 ± 0.18 respectively. Microscopic identification showed that WD1 was Fusarium sp, and WD2 was *Aspergillus* sp. These findings suggest that two fungus isolated from *G. pictum* have substantial antibacterial properties.

Keywords: *Endophytic fungi, Graptophyllum pictum, antimicrobial activity*

Indexing : Pharmacology

OP-037

SELF-MEDICATION PATTERN AMONG CUSTOMERS IN A COMMUNITY PHARMACY

Dedy Almasdy[1]*

[1]Faculty of Pharmaceutical Science, Andalas University, Padang, Indonesia
*Corresponding author. Email: dedyalmasdy@phar.unand.ac.id

ABSTRACT

Self-medication is a common practice carried out by the community. This practice is increasingly popular due to the increasing number of OTC products being marketed and the increase in public knowledge due to advances in information technology. This cross-sectional research was conducted at a community pharmacy by collecting data using a structured interview approach to document self-medication practices carried out by customers. A total of 285 customers were interviewed. The Mean age was 30.54 years old. The majority of them were female (74.4%), students (57.2%), and had secondary-level education (72.3%). The majority of the customers came to the pharmacy to continue their medicines which were bought before the day of the visit (60.4%). The dominant factor that influenced the customers to buy the medicines was the experience of using previous medicines (34.9%). Related to a question about customer's adherence to drug regimen, the majority of them (71.5%) answered 'always' and 'often', meanwhile to question about customers' practice if the medicine could not produce the desired effect, the majority of them (75%) answered 'stopping the medicines and seeking professional advice's. The total number of medicines that were bought by the customers were 375 items (mean 1.27 + 0.51), consisting of scheduled poison medicines, OTC medicines, vitamin/mineral supplement, and phyto-medica.

Keywords: *Community pharmacy, self-medication, non-prescription medicines, over the counter medicines*

OP-038

ASSESSMENT OF ANTIBIOTICS SALES IN SHOPS AND GROCERY STORES IN BOYOLALI, INDONESIA

Hidayah Karuniawati[1]*, Nidhar Ainu Faza Nugroho[1], Fauziah Nur Khasanah[1]

[1]Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Muhammadiyah Surakarta,57162 Indonesia
*Corresponding author. Email: hk170@ums.ac.id

ABSTRACT

This study aims to evaluate the sale of antibiotics in shops and grocery stores, determine the level of sellers' knowledge about antibiotics, and the relationship between sociodemographic factors and the level of knowledge of the sale of antibiotics. This research is an observational and cross-sectional study using surveys of shops and grocery stores selected based on inclusion criteria. Data were collected by filling out open and closed questionnaires. The sampling technique in this study used cluster sampling. Descriptive and analytic statistics analyzed the data. Of the 417 shops and grocery stores, it was found that 230 (55,2%) sold antibiotics, 48 (11,2%) had ever sold antibiotics, and 139 (33,3%) had never sold antibiotics. The most widely sold type of antibiotic was Supertetra® 262 (62.8%). The reason sellers sold antibiotics was that many buyers needed 193 (46,3%), as a complement 49 (11,8%), and just in case of anyone buying antibiotics, 22 (5,3%). 289 (69,3%), 97 (23,3%), and 31 (7.4%) respondents were categorized as lacking, sufficient, and having good knowledge about antibiotics, respectively. Based on the chi-square, the sale of antibiotics is not associated with factors of age (p=0,871), gender (p=0,199), education level (p=0,053), and level of knowledge (p=0,059). It is necessary to prohibit sellers in shops and grocery stores from selling antibiotics and educate them, especially regarding the function of antibiotics, how to use antibiotics, the side effects of antibiotics, and the impact of irrational antibiotic use.

Keywords: *Antibiotic, antibiotic knowledge, Supertetra®, grocery store, shops*

OP-039

EFFECT OF OIL PHASE IN SELF EMULSIFIYING SYSTEM NANOEMULSION FORMULATION ON PARTICLE SIZE USING PSA MALVERN MASTERSIZER

Nori Wirahmi[1'2], Erizal Zaini[1]*, Tommy Julianto[1], Yufri Aldi[1], Friardi[1],

[1]Fakultas Farmasi Universitas Andalas, Padang, Indosnesia
[2]Program Studi D3 Farmasi FMIPA, Universitas Bengkulu, Bengkulu, Indonesia

ABSTRACT

The oil phase is an important component in nanoemulsion formulations which can influence the physical properties of nanoemulsion formulas, one of which is particle size. The spontaneous method is a simple method for formulating nanoemulsions by simply varying the combination of oil, surfactant and cosurfactant phases. The PSA Mastersizer has become the standard for particle measuring instruments that are accurate, reliable and easy to use. The aim of this research is to see the effect of the oil phase used on the particle size of the nanoemulsion preparation. The method used in nanoemulsion formulation is a spontaneous emulsification method using several types of oil as the oil phase, including Olive Oil, Virgin Coconut Oil (VCO), Palm Kernel Oil (PKO), Almond Oil, Sun Flower Oil, Coco Caprylate Caprate Oil (CCC), Grapeseed Oil, Avocado Oil, Evening Prime Rose Oil and the particle size data obtained will be presented using descriptive methods. The results of the research showed that the particle sizes of nanoemulsions using several oil phases appeared to have differences in size, but the nanoemulsion size was still between 10-300 nm. The conclusion from this research is that the oil phase influences the particle size of the nanoemulsion preparation and the oil phase which has the smallest particle size is Palm Kernel Oil (PKO).

Keywords: *Oil Phase; Nanoemulsons; Particel Size*

OP-040

ANALYSIS OF PHYSICO-CHEMICAL PROPERTIES, TARGET POTENTIAL OF TGF B KELOID CELLS (PDB ID: 1VJY AND 3 TZM) AND TOXICOLOGY OF PURE ISOLATED COMPOUNDS FROM NATURAL MATERIALS USING THE IN SILICO

Ully Chairunisa[1]*, Purnawan P. Putra[2], Henny Lucida[2]

[1]Department of Formulation Technology, Padang College of Pharmaceutical Sciences (STIFARM-Padang)
[2]Faculty of Pharmacy, Universitas Andalas, Padang
*Corresponding author. Email: Ullychairunisa1234@gmail.com

ABSTRACT

Method Several previous studies have shown that pure isolates from Indonesian plants have enormous potential to be developed into Active Pharmaceutical Ingredients (APIs). 12 pure isolates are believed to be able to be developed into new drug candidates for cosmetic preparations as antikeloids. Secondary metabolite compounds isolated from pure natural ingredients such as triterpenoid compounds are believed to have anti-keloid and anti-inflammatory activity. Flavonoids (bioflavonoids) are pure substances derived from various plants and are used to prevent the formation of severe scars. The pure isolates are: alpha mangostin, asiaticoside, madecassoside, quercetin, lycopene, catechin, aloe emodin, allisin, gingerol, alliin, piperine and eugenol. Pure isolates were analyzed in silico to predict physicochemical properties, toxicity and target potency. In silico tests are carried out using big data and Machine Learning to predict physico-chemical properties, target potential and toxic properties. The pure isolate will also be subjected to molecular docking using "DOCK6" to obtain the binding energy (affinity) between the pure compound and the protein as seen from the docking score. The aim of this research is initial screening to see the potential of the compounds obtained. Twelve compounds were imaged in two dimensions, analyzed using software and servers. The software used was Marvin sketch, QSAR Toolbox, Swiss potention target and ChemBioDraw and the chemical properties of the compounds were analyzed. The results obtained are RMSD values (< 2 Å), docking scores, geometric optimization and images of bonds between compounds and target proteins. Apart from that, several supporting data were also obtained such as: log p, BM, absorption (log mol/L), skin permeability (log Kp) and toxicity (skin sensitization). From the results of this study, the compounds that have the highest docking scores in inhibiting the target proteins 1VJY and 3TZM (TGF-β1 protein) are asiaticoside, madecassoside and alpha mangosteen with their docking score values for the 1VJY protein (madecoside: -101,237; asiaticoside: -93,255) and protein 3TZM (alpha mangosteen :- 108.413; asiaticoside : -108.163 and madecassoside : -103.462). From the docking score results, it can be developed as a keloid drug from natural ingredients, namely madecassoside and asiaticoside compounds).

Keywords: *analysis of physico-chemical properties, in silico, pure isolate, toxicology*

OP-041

THE EFFECT OF CATECHINS FROM PURIFIED GAMBIER (UNCARIA GAMBIR ROXB.) AND VITAMIN C ON MALONDIALDEHYDE (MDA) LEVELS OF MALE WHITE MICE AFTER PHYSICAL ACTIVITY

Rahmi Yosmar[1], Ayu Amelia Putri[1], Almahdy A[1]*

[1]Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Andalas University, Padang, 25163, Indonesia
*Corresponding author. Email: almahdya@phar.unand.ac.id

ABSTRACT

Excessive physical activity triggers increased production of free radicals that cause oxidative stress which is characterized by increased levels of malondialdehyde (MDA). Goal of this research was to measure the effect of catechins from purified gambier and vitamin C on MDA levels of male white mice after maximum physical activity. This research used twenty five mice consisting of five treatment groups. Group 1 was not given treatment of physical fatigue activity as a negative control, group 2 was given treatment of physical fatigue activity as positive control, group 3 was given 200 mg/kgbb catechins from purified gambier, group 4 was given vitamin C 65 mg/kgbb, and group 5 given a combination of catechins from purified gambier 100 mg/kgbb and vitamin C 32.5 mg/kgbb. The test preparations were given for seven days of treatment and on the eighth day swimming was carried out until tired as a physical fatigue activity in mice. Thiobarbituric Acid Reactive Substance (TBARS) method was subjected to all animals before measuring mice blood serum MDA. Data analysis with the Kruskal Wallis continued with the Mann Whitney test. The average value of MDA serum in groups treated were 1.63, 2.47, 1.75, 1.93, and 1.65 nmol/ml, respectively. Positive control and treatment groups were significant difference with a p-value <0.05. It can be concluded that the administration of catechins from purified gambier and vitamin C reduced MDA levels after maximum physical activity.

Keywords: *Catechins from purified gambier, Vitamin C, Antioxidant, Free radicals, Physical activity, Malondialdehyde.*

Supporting Agencies : Supported by research grant of Faculty of Pharmacy Andalas University with number of contract 11/UN16.10.D/PJ.01./2023

OP-042

UNRAVELLING THE INTERACTION BETWEEN GARCINISIDONE-A AND HER-2 PROTEIN IN BREAST CANCER: A COMPUTATIONAL STUDY

Mainal Furqan[1], Dachriyanus[1], Meri Susanti[1], Purnawan Pontana Putra[1], Fatma Sri Wahyuni[1]*

[1]Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia
*Corresponding author. Email: fatmasriwahyuni@gmail.com

ABSTRACT

Using docking as an early stage of developing new drug candidates is increasingly popular because it can predict absorption, distribution, metabolism, and excretion (ADME). One substance found in the leaves of *Garcinia cowa* Roxb that has anticancer properties is called garcinisidone-A. To forecast the binding of the HER-2 protein in breast cancer cells, this study will simulate the docking of garcinisidone-A and predict the ADME. The research method is computational using pkCSM and SWISS ADME applications, garcinisidone-A docking simulation with HER-2 protein using Gnina software. According to the study, garcinisidone-A has a molecular weight of less than 500, a Log P value of greater than 5, a limited amount of water solubility, a low level of skin permeability, good intestinal permeability, and a Convolutional Neural Network (CNN) pose score on the HER-2 protein of 0.6178. It also does not readily cross the blood-brain barrier, and total clearance values indicate rapid elimination via other excretory routes or enzyme metabolism. Garcinisidone-A is thought to have interactions with HER-2. There are hydrogen bond interactions with amino acids Lys753 and Asp863, carbon-hydrogen bonds with amino acids Leu785, Ser783, Thr862, and alkyl bonds with amino acids Leu726, Leu852, and Ile767. The stability of garcinisidone A-substrate interaction could have been more evident during 100 ns molecular dynamics simulation. The results illustrate that garcinisidone-A has potential as a breast anticancer.

Keywords: *garcinisidone-A, breast cancer, HER-2, docking simulation, molecular dynamics*

Supporting Agencies: Sources the support, guidance, and financial assistance the Faculty of Pharmacy Universitas Andalas provide under contract number 115/E5/PG.02.00.PL/2023

Indexing: Pharmaceutical Chemistry

OP-043

FIGHTING FOSFOMYCIN RESISTANCE: IN SILICO SCREENING FOR FOSA INHIBITORS

Yori Yuliandra[1,2], Elissar Mansour[2], Christy El-Khoury[2], David Hibbs[2], Paul Groundwater[2]

[1]Faculty of Pharmacy, Andalas University, Indonesia
[2]Sydney School of Pharmacy, Faculty of Medicine and Health, The University of Sydney, Australia

ABSTRACT

Fosfomycin (FOM), an antibiotic with two decades of clinical use, exhibits a broad spectrum of activity, excellent solubility, and high tolerance. However, its effectiveness against Gram-negative organisms is hindered by FosA, a metalloglutathione transferase responsible for enzymatic inactivation. Inhibition of FosA presents a promising avenue for enhancing FOM's potency against resistant pathogens. Leveraging molecular docking and pharmacophore screening of databases of clinically approved drugs, potential inhibitors have been identified. These in silico investigations unveiled numerous promising FosA inhibitors, encompassing antimicrobials (sulfonamides, cephalosporin, and antiviral agents) and non-antimicrobial drugs. The antibacterial potential of these candidate compounds, either purchased or synthesized, will be subjected to in vitro testing against resistant strains, both in isolation and in combination with FOM. This approach holds the potential to streamline the protracted and resource-intensive regulatory approval process, mitigating the costs associated with novel chemical entities (NCEs).

Keywords: *Fosfomycin, FosA, adjuvant, in silico, antibacterial activity*

OP-045

APPLICATION OF FTIR SPECTROSCOPY AND CHEMOMETRICS ON BEEF MEATBALLS ADULTERATED WITH DOG MEAT FOR HALAL AUTHENTICATION

Wirnawati Wirnawati[1'2], Dwi Lestari[1'2], Abdul Rohman[4'5], Regina Andayani[1], Eka Siswanto Syamsul[1'3], and Dachriyanus Hamidi[1]*

[1]Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia, 25163
[2]Faculty of Pharmacy, Universitas Muhammadiyah Kalimantan Timur, Samarinda, Indonesia, 75124
[3]Faculty of Pharmacy, Sekolah Tinggi Ilmu Kesehatan Samarinda, Samarinda, Indonesia, 75242
[4]Center of Excellence, Institute for Halal Industry and Systems (PUI-PT IHIS), Universitas Gadjah Mada, Yogyakarta, Indonesia, 55281
[5]Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Universitas Gadjah Mada, Yogyakarta, Indonesia, 55281
*Corresponding author. Email: dachriyanus@phar.unand.ac.id

ABSTRACT

Protein is really needed by the body, one source of protein is from animal sources such as beef. Nowadays many animal sources are made into processed foods that are popular with children and adults. The most popular processed food is meatballs made from beef, but nowadays the price of beef is getting more expensive day by day, which makes fraudulent traders who are chasing profits mix or replace beef with dog meat which is cheaper. This study aims to assess the suitability of FTIR spectroscopy combined with multivariate partial least squares regression analysis (PLS) and principal component regression (PCR) along with principal component analysis (PCA) pattern recognition techniques for identification and quantification analysis of dog meat (DM) in beef meatballs (BM). The Soxhlet method was used to obtain lipids in beef meatballs using petroleum benzene as a solvent. The lipids obtained were then analyzed using FTIR spectroscopy in the 4000-650 cm-1 spectrum. Qualitative chemometric analysis was carried out using discriminant analysis (LDA), while quantitative chemometric analysis was carried out using partial least squares (PLS) and principal component regression (PCR) methods. The results showed that the selected wave number 3000–2100 cm–1 was chosen to differentiate beef meatballs and meatballs adulterated with dog meat using linear chemometric discriminant analysis (LDA). LDA was successfully used to classify the lipid components of meatballs sausages and dog meatballs with 100% accuracy.

Keywords: *beef meatball, dog meat, FTIR spectroscopy, multivariate calibrations, linear discriminant analysis*

Supporting Agencies : This work was supported by Ministry of Education, Culture, Research and Technology through DRTPM DIKTI Grant-in-Aid 115/E5/PG.02.00. PL/2023 (LPPM Unand No 50/UN16.19/PT.01.03/2023).

Indexing : Chemical Pharmacy

OP-046

RUBRAXANTHON-MEDIATED MODULATION OF CYCLIN D1 PROTEIN EXPRESSION IN MCF-7/HER2 BREAST CANCER CELL LINE: A WESTERN BLOT ANALYSIS

Desi Eka Putri[1'2], Alya Athika Zuhrah, Elidahanum Husni[3], Dachriyanus Hamidi[3], Fatma Sri Wahyuni[3]*

[1]Post Graduate Student, Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia 25163
[2]Indonesian Food and Drug Administration, Jakarta, Indonesia 10560
[3]Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia 25163
*Corresponding author. Email: fatmasriwahyuni@phar.unand.ac.id

ABSTRACT

Background: Rubraxanthon is a compound of the xanthon group isolated from *Garcinia cowa* Roxb. This compound has cytotoxic activity against several cancer cell lines, including the MCF-7/HER2 breast cancer cells, with an IC50 value of 12.88 µM. Objective: This study aimed to investigate the effect of rubraxanthon from *Garcinia cowa* Roxb. on cyclin D1 protein expression in MCF-7/HER2 breast cancer cells. Methods: This study compared the rubraxanthon-treated group with the negative control group using the Western blot method to measure the area and density of cyclin D1 protein bands. Statistical analysis was performed using the Mann-Whitney test to assess the results. Results: Rubraxanthon affects the expression level of cyclin D1 protein in MCF-7/HER2 breast cancer cells based on the parameters of area and density of the cyclin D1 protein. The statistical analysis showed that the cyclin D1 protein expression level was lower than the negative control group, as p-value ≤0.05. Conclusion: Rubraxanthon reduced the cyclin D1 protein expression of MCF-7/HER2 breast cancer cells, which was statistically significant. These findings suggest that rubraxanthon inhibits the cell cycle by reducing cyclin D1 protein expression, which has the potential as an anticancer agent.

Keywords: *Garcinia cowa Roxb., Rubraxanthon, MCF-7/HER2, Cyclin D1, Western blot*

OP-047

EFFECT OF ETHYL ACETATE FRACTION OF ROSELLA PETALS (HIBISCUS SABDARIFFA L.) TO THE BLOOD SUGAR AND FAT ON WHITE MALE DIABETIC RATS

*Netty Suharti[1], Cyndi Muria Ramadan[1], Rahmad Abdillah[1], Armenia[1]

[1]Faculty of Pharmacy, Andalas University, Padang 25163, Indonesia
*Corresponding author. Email: nettysuharti@phar.unand.ac.id

ABSTRACT

Diabetes mellitus is a chronic condition when there is an increase in blood glucose levels. In general, people with diabetes mellitus will experience disturbances in fat metabolism, one of which is increased cholesterol levels or hypercholesterolemia. Various efforts have been made to overcome this disease, one of which is through the exploration and evaluation of various plants that can control blood sugar as well as blood fats. One of the plants that can reduce blood sugar and blood fat levels is rosella (*Hibiscus sabdariffa* L.). This study aims to determine the effect of giving rosella calyx ethyl acetate fraction on blood sugar and blood lipids in male white rats with diabetes mellitus induced by streptozotocin. The ethyl acetate fraction of rosella calyx was given for 5 days using 2 doses, namely 100 mg/kg and 200 mg/kg, then blood sugar, total cholesterol and triglyceride levels were observed before and on the 1st, 3rd and 5th day after drug administration. The research data were analyzed using a two-way ANOVA and continued with Duncan's test (significance level was taken if ($p<0.05$). The results showed that the test animals that were given the ethyl acetate fraction of rosella calyx (Hibiscuss sabdariffa L.) for a long time showed lower blood sugar and total cholesterol ($p<0.05$), however, there was no effect of the ethyl acetate fraction of rosella calyx on triglyceride changes.

Keywords: *Ethyl acetate fraction, Hibiscuss sabdariffa L, Diabetes, Total cholesterol, Triglycerides*

Supporting Agencies : Source of research funding by Faculty of Pharmacy, Andalas University in 2023.

Indexing : Pharmaceutical Biology

OP-048

XYLOSE PRODUCTION FROM XYLAN ONGGOK THROUGH FERMENTATION OF BACILLUS SUBTILIS AND PENICILLIUM JANCZEWSKII

Fefpi Nur Afnifitri Wias Arianti[1]*, Jay Jayus[2'3], Anak Agung Istri Ratnadewi[3]

[1]Graduate School of Biotechnology, Universitas Jember, Jl. Kalimantan 37, Kampus Tegalboto, Jember 68121, East Java, Indonesia
[2]Center of Excellent for Industrial Plant Biotechnology, Universitas Jember, Jl. Kalimantan 37, Kampus Tegalboto, Jember 68121, East Java, Indonesia
[3]Departement of Agricultural Product Technology, Universitas Jember, Jl. Kalimantan 37, Kampus Tegalboto, Jember 68121, East Java, Indonesia
*Corresponding author. Email: fefpi12@gmail.com

ABSTRACT

Onggok is lignocellulose solid waste derived from the processing of cassava into tapioca. Onggok can be used as a source of xylose. The utilization of waste lignocellulose is widely done because these materials are widely available, cheap, and renewable. Bioconversion of lignocellulose waste into xylose can use microbes, both single microbes and consortiums. The purpose of this study was to determine the ability of microbes to convert xylan from onggok to xylose. This research is an experimental study that uses a descriptive method with quantitative results using DNS tests. The factors used are the types of microbes, namely *Bacillus subtilis*, *Penicillium janczewskii*, and their consortiums. The results showed that a single microbial treatment was able to produce xylose successively in *Bacillus subtilis* which was 70,56 mg/L, then followed by *Penicillium janczewskii* 77,50 mg/L, and in the consortium of *Bacillus subtilis* and *Penicillium janczewskii* of 70,00 mg/L. The observations showed that *Bacillus subtilis*, *Penicillium janczewskii*, and their consortium have the ability to convert xylan into xylose and produce xylanolytic enzymes.

Keywords: *Bacillus subtilis, Penicillium janczewskii, xylan, xylose*

Indexing : Microbiology and Biotechnology

OP-049

FORMULATION OF NANOPARTICLE CONTAINING KENIKIR LEAVES EXTRACT (COSMOS CAUDATUS KUNTH.) AND ANTIDIABETIC ACTIVITY IN RATS

Dina Permata Wijaya[1]* Herlina[1], Raden Ayu Aulya' Azizan Haq[1]

[1]Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Sriwijaya University, Indralaya, Ogan Hilir Regency, South Sumatra, Indonesia, 30862
*Corresponding author. Email: dinapermatawijaya@unsri.ac.id

ABSTRACT

Kenikir leaves extract have pharmacological activity as an antidiabetic because it contains flavonoid compounds which can become the α-glucosidase enzyme inhibitor. The effectiveness and bioavailability of extracts tend to be low so loading into nanoparticles for improving the delivery system which can increase the effectiveness of the pharmacological activity. The method of gelation ionic is used in formulation kenikir leaves extract by nanoparticle with chitosan and variation in concentration of sodium tripolyphosphate. The nanoparticle formula was characterized and tested for antidiabetic activity in rats was initiated by inducing a high-fat and fructose diet. The result of the characterization of nanoparticle was the percent of efficiency encapsulation, particle size, PDI, zeta potential, and pH were carried out to get the best formula. The best formula obtained was the percent of efficiency encapsulation of 96,20%, particle size of 144,6 nm, zeta potential of +15,32 mEv, and PDI of 0,48. The decrease in blood glucose levels in the nanoparticles of kenikir leaves extract was not significantly ($p>0,05$) different from the positive group (metformin) compared to the kenikir leaves extract which dereased not really significantly

Keywords: *Kenikir leaves extract, nanoparticles, antidiabetic activity, flavonoid, rats*

Indexing : Pharmaceutical Technology

OP-050

BIOACTIVITIES OF LEAVES AND FLOWER MELASTOMA MALABATHRICUM L EXTRACT AS ANTIOXIDANT AND ANTIBACTERIAL AGENT

Siti Hamidatul Aliyah[1]*, Ruri Putri Mariska[1], Chessy Aziza Putri[1], Zulfha Candra[1], Salsabila Anggriani[1], Santi Perawati[1], Lili Andriani[1], Rizky Yulion[1]

[1]Pharmacy Programs, Sekolah Tinggi Ilmu Kesehatan Harapan Ibu Jambi, Jambi, Indonesia
*Corresponding author. Email: sitihamidatula@gmail.com

ABSTRACT

Senduduk plant (*Melastoma malabathricum* L) is a wild plant whose leaves, stems, flowers, fruits, and seeds are widely used for medicinal purposes. Ethnopharmacological studies have shown that the indigenous people of the Anak Dalam tribe (SAD) in the Province of Jambi use the Senduduk plant for treating respiratory problems, coughs, toothaches, and wounds. The aim of this research is to determine the total phenolic and flavonoid content in leaf and flower extracts of Senduduk and their potential as antioxidants and antibacterial agents. Phytochemical screening will be conducted by observing color changes according to the groups of secondary metabolite compounds. Furthermore, the determination of the maximum wavelength will be carried out using UV-Vis Spectrophotometry with gallic acid and quercetin as standards. The maximum wavelength for gallic acid as a standard for phenolic content was found to be λ = 655 nm, and for quercetin as a reference for flavonoid content, it was λ = 443 nm. Gallic acid absorbance data will be used to calculate the phenolic content, and quercetin absorbance will be used to calculate the flavonoid content. Antioxidant testing will be performed using the DPPH method, and antibacterial testing will be carried out using the disc diffusion method. The bacteria used are *Staphylococcus aureus* and *Escherichia coli*. Based on the research results, the phenolic content in ethanol extracts of Senduduk leaves and flowers was 2.997 ± 1.583 (mg GAE/mg) and 2.984 ± 1.575 (mg GAE/mg), respectively, while the flavonoid content was found to be 0.8 ± 0.318 (mg QE/mg) and 0.8 ± 0.317 (mg QE/mg) for ethanol extracts of leaves and flowers, respectively. The 96% ethanol extract from the leaves had an IC50 value of 46.13 µg/ml, while the 96% ethanol extract from the flowers had an IC50 value of 44.57 µg/ml. These results indicate that both the leaves and flowers of Senduduk exhibit strong antioxidant activity. The research also demonstrates that leaf and flower extracts of Senduduk are capable of inhibiting bacterial growth, with inhibition zones measuring 13.71 mm, 14.28 mm, and 15.23 mm (±0.40) for the leaves and 9.95 mm, 12.86 mm, and 13.31 mm (±1.56) for the flowers. The diameter of inhibition showed the strongest antibacterial activity at a concentration of 60 ppm with an inhibition zone of 15.23 mm in the leaf extract. This indicates that the leaf extract of Senduduk has the strongest antibacterial activity at a concentration of 60 ppm.

Keywords: *Melastoma, phenolic, antioxidant, antibacterial*

Indexing : Pharmaceutical Microbiology and Biotechnology

OP-051

CYTOTOXIC ACTIVITY OF MIKANIA SPECIES (MIKANIA MICRANTHA KUNTH AND MIKANIA CORDATA (BURM. F) B.L.ROB) AGAINST MCF-7 BREAST CANCER CELLS USING THE MTS ASSAY

Lili Andriani[1] , Dwi Nova Listary, Sonia Maya Safitri[1], Santi Perawati[1]*

[1]Program Studi Farmasi, Sekolah Tinggi Ilmu Kesehatan Harapan Ibu Jambi, Jln. Tarmidzi Kadir, No. 71 Pakuan Baru, Jambi, Indonesia
*Corresponding author. Email: santiperawati@gmail.com

ABSTRACT

Breast cancer is a group of abnormal cells in the breast. Every year there are still many cases of breast cancer in Indonesia. In Suku Anak Dalam Jambi many plant medicines are used to cure several diseases, one of which is the weed of Mikania species (*Mikania micrantha* Kunth and *Mikania cordata* (Burm. F) B.L.Rob). They used that plant for Treating several types of inflammatory diseases. Some previous research reported that the Mikania species has high antioxidant activity. This study aimed to test the cytotoxic potential of Mikania species extract against breast cancer cells (MCF-7). The research method begins with the extraction stage by maceration for the plants using ethanol 96%, and then the extract continues for phytochemical and cytotoxic screening tests. for the cytotoxic test was carried out using the MTS Assay method with 5 series concentrations of extract (1000, 500, 250, 125, 62,5 ppm). The result showed cytotoxic activity from *Mikania micrantha* and *Mikania cordata* extract was in the weak toxic category with an IC50 value is 295,792 and 312,315 ppm. For the results of determining the phytochemical content, both extracts show alkaloids, flavonoids, saponins, tannins, terpenoids, and steroids. The research concludes that Mikania species extract has weak cytotoxic potential against breast cancer cells (MCF-7).

Keywords : *Breast Cancer, Extract, Mikania cordata, Mikania micrantha Kunth, MCF-7, MTS Assay*

Supporting Agencies : Source of research funding by STIKES Harapan Ibu Jambi with number of contract 475/STIKES/JBI/VII/KT-2022

Indexing: Natural Medicine

OP-052

CHARACTERIZATION OF NATURAL PRODUCT COMPOUD OF MELASTOMA MALABATHRICUM WITH LC-MS/MS

Rizky Yulion[1]* Lili Andriani[1], Siti Hamidatul Aliyah[1], Santi Perawati[1], Rifdatul Hasanah[1]

[1]Sekolah Tinggi Ilmu Kesehatan Harapan Ibu Jambi,Indonesia
*Corresponding author. Email: rizkyyulionputra10@gmail.com

ABSTRACT

Melastoma malabathricum is one of the species in the Melastomaceae family that has long been used by local communities in Indonesia, including the Anak Dalam Jambi tribe (SAD). Chemical content exploration within this plant is the primary focus of this research. A qualitative method was employed in this study. The LC-MS/MS instrument was utilized to detect chemical components present in the research samples, which consisted of ethanol fractionation extracts with soxhlet method. Nineteen compounds were identified, including Quercetin, Quercitrin, DEET, N-Boc-3-Pyrrolidinone, Medicarpine, Taxinine and other compounds. DEET was identified as the compound with the highest concentration. Furthermore, this chemical component data holds significant potential for in-silico, in-vitro, and in-vivo bioactivity assessments.

Keywords: *Melastoma malabathricum, LC-MS/MS, Natural Product Compound, Suku Anak Dalam (SAD), fractionation.*

Supporting Agencies : Source of research funding by research ministry of Singapore with number of contract 0823-8768-0295

Indexing : Pharmaceutical Biology and Chemistry

OP-053

ANTICANCER ACTIVITY OF PIPER RETROFRACTUM TARGETING IN APOPTOSIS THROUGH COMPUTATIONAL STUDY

Jantje Wiliem Souhaly[1]*

[1]Faculty of Biology, Gadjah Mada University, Yogyakarta, Indonesia
*Email: jantjesouhaly@gmail.com

ABSTRACT

Cancer is one of the most various disease with abnormal of cells to growth and this condition can lead to death. Cancer cells may suppress apoptosis by exposing antiapoptotic proteins or decreasing proapoptotic protein. *Piper retrofractum* is a herb with high potential as anticancer agent. The goal of this research is to document the information active compounds of *Piper retrofractum* and also analyze active compounds with proteins Bcl-2. The information of active compound of Piper retrofractum was collected from KNApSAcK database and Pa using Way2Drug. The analysis of interaction of compound-protein using molecular docking. The results described that there were 3 compounds have high Pa value and (-)-beta-Sitosterol have potential to inhibit Bcl-2 protein compared to the control with binding affinity -7.6 kcal/mol. The active compounds have potential in the apoptosis and it can be indicated that *Piper retrofractum* may be a candidate to make a formulation for cancer therapy and should be conducted in a real experiment.

Keywords: *Apoptosis, Bcl-2, Cancer, Molecular Docking, Piper retrofractum*

OP-054

ANTI-DIABETIC POTENTIAL AND HISTOPATHOLOGY CHANGE IN THE PANCREAS OF MALE WHITE MICE INDUCED-ALLOXAN FROM THREE VARIETY OF GREEN COFFEE BEANS

Fenny Khairunnisa[1]*, Elmi Sariani Hasibuan[2], Ulfa Ismirza[3]

[1]Sekolah Tinggi Ilmu Farmasi Riau, Riau, Indonesia
[2]Universitas Aufa Royhan Padang Sidempuan, Sumatera Utara, Indonesia
[3]Sekolah Tinggi Ilmu Farmasi Padang, Sumatera Barat, Indonesia
*Corresponding author. Email: fennykhairunnisa@stifar-riau.ac.id

ABSTRACT

Coffee is a widely consumed beverage that derive pleasure from significant popularity across a diverse range of individuals. Additionally, green coffee beans contain chlorogenic acid recognized for its potential benefits in the realm of health which is reported as an anti-diabetic agent. This study aimed is to determine the effect of three different variety of Green coffee beans (*C. robusta, C. arabica* and *C. liberica*) to evaluate the effects of alloxan-induced diabetes on blood glucose levels and histopathology in mice. Forty-five diabetic mice were randomly grouped into five: negative control (treated with distilled water), positive control (treated with glybenclamide at 0.65 mg/kg BW), and 3 other groups treated with Robusta, Arabica and Liberica green coffee beans. The treatment was made for 14 consecutive days orally. The parameters are percentage decrease blood glucose and histological examination in mice diabetic. The data were analyzed using two-way ANOVA and followed by Duncan multiple range T-test. The result showed that given by green coffee beans significantly increased the percentage decrease in blood glucose levels ($p<0.05$) and exhibited a lower degree of degeneration and necrosis in the Langerhans islands in mice diabetic. Robusta green coffee bean has the highest effect as compared to arabica and liberica green coffee beans. This indicated that green coffee beans produced a blood glucose lowering effect on the diabetes animal model.

Keywords: *coffee, blood glucose, diabetic mice, histology*

Indexing : Pharmacology

OP-055

INHIBITORY EFFECTS OF FLAVONOIDS ON THE BIOSYNTHESIS OF PROSTAGLANDIN E2 (PGE2) IN HUMAN PLASMA

Dira Hefni[1]*

[1]Faculty of Pharmacy, Universitas Andalas, Indonesia
*Corresponding author. Email: dirahefni@phar.unand.ac.id

ABSTRACT

Nine flavonoids, apigenin (1), biochanin A (2), fisetin (3), flavones (4), galangin (5), 3-hydroxyflavone (6), myricetin (7), a-naphthoflavone (8) and b-naphthoflavone (9), were investigated for their inhibitory effects on the biosynthesis of prostaglandin E2 (PGE2) in human plasma in vitro. The anti-inflammatory effect was performed by measuring the PGE2 levels in plasma by using radioimmunoassay (RIA) technique. Among the nine flavonoids, a-naphthoflavone (8) exhibited the highest inhibition of 63.3 %, followed by b-naphthoflavone (9) and 3-hydroxyflavone (6) with 60.2 % and 56.4 % inhibition respectively. Meanwhile, the lowest inhibitory effect was showed by flavone (4) with only 11.4 % inhibition. The results indicate that a-naphthoflavone (8) and b-naphthoflavone (9) possess promising potent anti-inflammatory properties.

Keywords: *Flavonoid; prostaglandin E2; human plasma; radioimmunoassay; anti-inflammatory*

Supporting Agencies : We wish to thank the Ministry of Science, Technology and Innovation Malaysia for financial support under research grant 02-01-02-SF0016.

Indexing : Pharmaceutical Biology

OP-056

EVALUATION OF COMPLIANCE WITH GOOD DRUG DISTRIBUTION PRACTICES AS A QUALITY MANAGEMENT SYSTEM AT PHARMACEUTICAL WHOLESALERS IN THE MADIUN AREA

Yanuar As'hari[1'2]*, Chairun Wiedyaningsih[1], Nanang Munif Yasin[1]

[1]Faculty of Pharmacy, Gadjah Mada University, Yogyakarta 55281, Indonesia
[2]School of Health Sciences Bhakti Husada Mulia Madiun, East Java 63139, Indonesia
*Corresponding author. Email: yanuarashcahya@gmail.com

ABSTRACT

The optimization of drug needs to improve the quality of health is a goal for all health facilities, including distribution facilities that distribute medicines. This study aims to evaluate aspects of the implementation of the Good Drug Distribution Method (GDP) as a quality management system at Pharmaceutical Wholesalers (PW) in Madiun. This research was conducted quantitatively and qualitatively and analyzed by descriptive method. The study population was PBF in the Madiun area. The research sample used was 8 PWs. For quantitative research using a questionnaire based on GDP aspects. For qualitative research using interview guidelines based on questions related to GDP aspects. GDP aspects consist of 9 aspects including quality management, organization, management and personnel, buildings and equipment, operations, self-inspection, complaints, returned drugs and/or drug ingredients, suspected counterfeits and recalls, transportation, distribution facilities under contract, and documentation. Results of an evaluation of the compliance level of GDP in the Madiun area; 4 (50%) PW met ≥ 80% with outstanding criteria, 3 (37.5%) PW met ≥ 65 - < 80% with good criteria, 1 (12.5%) PW has fulfilled ≥ 50 - < 65% with sufficient criteria. The results of interviews with most of the pharmaceutical wholesalers showed outstanding results as supporting data from the questionnaire results. There is a need for regular monitoring of compliance with GDP aspects by supervisory agencies to maintain consistency of GDP compliance in ensuring the quality of drugs along the distribution channels can be achieved.

Keywords: *Good Drug Distribution Method, Quality Management, Pharmaceutical Wholesalers, Madiun*

Indexing : Management Pharmacy

OP-057

CYTOTOXIC ACTIVITY AND PHYTOCHEMICAL SCREENING OF ETANOL EXTRACT OF BAJAKAH TAMPALA (UNCARIA LANOSA VAR. FERREA (BLUME) RIDSDALE) ON BREAST CANCER CELL LINES MCF-7

Mashuri Yusuf[1'4], Muhaimin Muhaimin[2]*, Riezki Amalia[3], Yoppi Iskandar[2]

[1]Faculty of Pharmacy, Padjadjaran University, Sumedang, Indonesia.
[2]Department of Pharmaceutical Biology, Padjadjaran University, Sumedang, Indonesia.
[3]Departmen of Pharmacology and clinical pharmacy, Padjajaran University, Sumedang, Indonesia.
[4]Department of Pharmacy, Kesuma Bangsa Health Polytechnic, Lampung, Indonesia.
*Corresponding author. Email: muhaimin@unpad.ac.id. Tel +6222 842 88888

ABSTRACT

Breast cancer is known to have surpassed lung cancer as the most commonly diagnosed cancer and the fifth leading cause of cancer death in the world, with an estimated 2.3 million cases and 685,000 deaths in 2020 and cases expected to reach 4.4 million by 2070 (1). Therefore, new treatment strategies for breast cancer can be developed from the extraction of new bioactive compounds, especially from natural materials through ethnobotanical and chemotaxonomic approaches. One species that can be developed as a medicinal material is bajakah tampala (*Uncaria lanosa* var. *ferrea* (Blume) ridsdale) (2). Previous studies have shown that ethanol extract of bajakah tampala stem has antimicrobial activity against *Escherichia coli*, wound healing, antimalarial, and hepatoprotector, but there are no research results stating that bajakah tampala stem extract as an anti-breast cancer agent. This study aims to determine the content of secondary metabolites and cytotoxic activity indicated by the IC50 value of the ethanol extract of bajakah tampala stem. The cytotoxic activity test was conducted on the MCF 7 breast cancer cell model using the WST-8 method (3). Based on the results showed that the ethanol extract of bajakah tampala stem has secondary metabolite content, namely the presence of saponins, steroids, tannins, alkaloids, flavonoids and phenolics. The results of the cytotoxic test of ethanol extract of bajakah tampala stem have cytotoxic activity with an IC50 value of 193.2 ppm which is included in the moderately active category. The conclusion of this study is that bajakah tampala stem extract has cytotoxic activity with a moderately active category.

Keywords: *bajakah tampala, cytotoxic, breast cancer, MCF-7 cells*

Indexing : Pharmaceuticals Biology

OP-058

PHYTOCHEMICAL SCREENING AND ANTIOXIDANT ACTIVITY TEST OF LUPUN ROOT (POIKILOSPERMUM SUAVEOLENS (BLUME) MERR) FROM SOUTH OF BORNEO

Lia Mardiana[1'4], Tiana Milanda[2]*, Yuni Elsa Hadisaputri[2], Anis Yohana Chaerunisaa[3]

[1]Doctoral Program, Faculty of Pharmacy, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang KM 21, Jatinangor 45363, West Java, Indonesia
[2]Department of Biology, Faculty of Pharmacy, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang KM 21, Jatinangor 45363, West Java, Indonesia
[3]Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmacy, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang KM 21, Jatinangor 45363, West Java, Indonesia
[4]Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmacy, Universitas Islam Kalimantan Muhammad Arsyad Al-Banjari, Jl. Adhyaksa No.2, Banjarmasin 70123, South of Borneo, Indonesia
*Corresponding author. Email: tiana.milanda@unpad.ac.id

ABSTRACT

Lupun root is the local name for *Poikilospermum suaveolens* (Blume) in the Aranio region, South of Borneo, Indonesia. The Lupun Root is employed by the community as a traditional remedy for various ailments, including enhancing the body's immune system. *Poikilospermum suaveolens* (Blume) Merr is a plant that contains secondary chemical metabolites. his research evaluated the secondary metabolites and antioxidant properties of the ethanol extract of Lupun root (*Poikilospermum suaveolens* (Blume) Merr). The research samples were collected at Aranio, South of Borneo. Extraction method using 96% ethanol with maceration method. The method used was in the form of phytochemical screening and antioxidant activity test using the DPPH (2,2-diphenyl-1-picrylhydrazyl) method using a UV-Vis spectrophotometer. The results of the phytochemical screening showed that the compounds contained in lupun root extract that was extracted using 96% alcohol were alkaloids, flavonoids, tannins, and phenols. While the antioxidant test results on lupun root extract showed an IC50 value of 20,44 µg/mL. The observed values signify that the ethanol extract of lupun roots demonstrates a remarkably potent set of antioxidant properties. These findings suggest that this plant holds the potential to be developed into a pharmaceutical product.

Keywords: *Antioxidant, Phytochemical screening, Poikilospermum suaveolens.*

Indexing: Pharmaceutical Biology

OP-059

TABLET FORMULATION COMBINATION OF PAPAYA LEAF EXTRACTS (CARICA PAPAYA) AND CINNAMON (CINNAMOMUM BURMANII) WITH A VARIATION CONCENTRATIONS PVP K-30 AS BINDER

Erni Rustiani[1]*, Rini Ambarwati[1],Restiyani[1]

[1]Program Studi Farmasi, FMIPA, Universitas Pakuan, Jl. Ciheuleut, Pakuan, Bogor 16154
*Corresponding author. Email: ernirustiani@unpak.ac.id

ABSTRACT

Background: Tablets are a pharmaceutical dosage form that is often used because they are simple and practical. The use of binders in tablet preparations is expected to maintain the dosage form and provide the physical strength of the tablet. One of the binders is PVP K-30, which can increase hardness and produce good tablet quality.
Objectives: To determine the concentration of PVP K-30 binder which produces the best quality and dissolution profile in a tablet preparation of a combination of papaya and cinnamon leaf extracts, as well as determine the levels of flavonoids and cinnamic acid in the extract and tablets.
Method: Tablets were made by the wet granulation method. A total of 4 tablet formulas were made with different concentrations of PVP K-30, namely 2% (F1), 3% (F2), 4% (F3), and 5% (F4). The quality of the resulting tablets was tested and the dissolution profile and levels of flavonoids and cinnamic acid were determined.
Results: All tablet formulas meet quality requirements. Tablets have a green color, a flat round shape with a central line on the top surface and a plain bottom, a slightly bitter taste, and a characteristic aromatic extract odor. The F3 tablet formula produces the best quality with a hardness value of 4.04 kp, friability of 0.54%, disintegration time of 5 minutes and dissolution of 92.19%. The flavonoid content in a mixture of papaya leaf extract and cinnamon is 12.35% and the cinnamic acid content in cinnamon extract is 9.70%. Tablets have flavonoid levels, namely F1 (9.47%), F2 (9.54%), F3 (9.60%), and F4 (9.35%) and cinnamic acid levels in F1 tablets (8.09%) , F2(8.13%), F3(8.40%), and F4(8.22%).
Conclusion: The combination of tablets of papaya leaf and cinnamon extract using PVP K-30 of 4% (F3) showed the best tablet quality with a flavonoid content of 9.60%, cinnamic acid content of 8.40% and a dissolution rate of 92.19%.

Keywords: *Flavonoids; Cinnamic Acid, Dissolution, PVP K-30*

OP-060

CURCUMA AERUGINOSA ROXB. EXTRACT INHIBITS THE SECRETION OF PROINFLAMMATORY CYTOKINES ON RAW 264.7 MACROPHAGES

Irene Puspa Dewi[1,2], Dachriyanus[1], Yufri Aldi[1], Nor Hadiani Ismail[3], Dira Hefni[1], Meri Susanti[1], Fatma Sri Wahyuni[1]*

[1]Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia, 25163
[2]Akademi Farmasi Prayoga, Padang, Indonesia, 25111
[3]Atta-ur-Rahman Institute for Natural Product Discovery, UiTM Puncak Alam Campus, Selangor, Malaysia
*Corresponding author. Email: fatmasriwahyuni@phar.unand.ac.id

ABSTRACT

Curcuma aeruginosa Roxb. is a medicinal plant widely used traditionally in Indonesia for gastrointestinal disease, and as antimicrobial and anti-inflammatory agent. However, scientific evidence for the bioactivity of this rhizome as an anti-inflammatory is still limited. This study aims to explore the potential of *Curcuma aeruginosa* Roxb. extract for anti-inflammatory properties. In vitro testing was carried out on Raw 264.7 macrophages to fulfill this aim by observing phagocytosis activity, IL-6, and TNF-α macrophage production assays. Testing phagocytosis activity using the neutral red uptake method while testing the level of IL-6 and TNF-α using the ELISA method. The results showed that *Curcuma aeruginosa* Roxb. extract inhibited phagocytic activity and production of IL-6 and TNF-α in LPS-induced Raw 264.7 macrophages. These results demonstrated that *Curcuma aeruginosa* Roxb. extract could be developed as an anti-inflammatory in the health sector.

Keywords: *Curcuma aeruginosa Roxb., immune response, LPS, Raw 264.7 macrophages*

Supporting Agencies : This research was funded by Ministry of Education, Culture, Research and Technology through DRTPM DIKTI Grant-in-Aid 115/E5/PG.02.00. PT/2023 (LPPM Unand No 66/UN16.19/PT.01.03/2023).

Indexing : Pharmacology

OP-061

SUNSCREEN ACTIVITY OF UV-B ABSORPTION OF THE N-BUTANOL FRACTION AND THE SPRAY GEL PREPARATION OF SENDUDUK LEAVES (MELASTOMA MALABATHRICUM L.)

Ruri Putri Mariska[1], Lili Andriani[1], Eci Yestin[1]

[1]Program Studi Farmasi, Sekolah Tinggi Ilmu Kesehatan Harapan Ibu Jambi

ABSTRACT

Senduduk Leaves (*Melastoma malabatricum* L.) is a type of weed that is useful as a traditional medicine for treating various diseases, such as cough medicine, diarrhea, vomiting, and toothache medicine. This is because sedunia leaves contain antioxidant compounds such as flavonoids. This research aims to find out whether the n-butanol fraction of Senduduk Leaves has activity as a UV-B absorption sunscreen and what is the best concentration that produces UV-B absorption sunscreen and to find out whether the n-butanol fraction of senpadu leaves can be formulated into a dosage form. spray gel as a UV-B absorption sunscreen.

This research method is laboratory experimental. Starting from the preparation of a sample of senduduk (*Melastoma malabathricum* L.) to a fraction using Soxhlet, identification of the compound using LC-MS, sunscreen is expressed in the form of an SPF value obtained using the Mansur equation which is tested in vitro using UV-Vis spectrophotometry, then formulated into a dosage form spray gel and evaluated physical properties.

The results of this research showed that the compound identification from LC-MS showed that the n-butanol fraction of senduduk leaves contained the compounds quarcetin, hyperoside, ergoflavin, triglysidyl amine, kaempferol, kandelin, brazilin, kushenol, medikarpine, doxapros, teopederin B. The SPF value of the fraction with the same concentration the best is 60ppm, namely SPF 16 ultra protection category, yellowish brown spray gel preparation, homogeneous, viscosity 791 cps, pH 5, average spray pattern 5 cm, spread power 3 cm. Based on the research results, it can be concluded that the n-Butanol fraction of senduduk leaves (*Melastoma malabathricum* L.) has the potential to be used as a spray gel preparation as sunscreen.

Keyword : *Melastoma malabathricum L., SPF, Spray Gel*

OP-062

STUDY OF RECOMMENDATION THE MEDICATION OPTIONS FOR PRODUCTIVE COUGH WITHOUT INFECTION SYMTOMS FOR SELF-MEDICATION FROM PHARMACY EMPLOYEES IN KURANJI DISCTRICT, PADANG CITY

Hansen Nasif[1]*, Yelly Oktavia Sari[1], Chyntia Bella Andrelva[1]

[1]Faculty Of Pharmacy Andalas University Padang Indonesia, Kampus Unand Limau Manis Padang Indonesia 25163
*Corresponding author. Email: hansennasif@phar.unand.ac.id

ABSTRACT

Cough is a natural physiological reflex carried out by the body, which aims to free the airway from foreign objects, mucus or annoying phlegm. There are many choices of medicines for coughs require special expertise to provide the right medicine according to the patient's condition. This research is a cross sectional study with the sampling technique being total sampling. The research used an interview technique with a single question as to what medicine would be recommended by pharmacy employees if an adult patient come with a productive cough without symptoms of infection. There are 30 pharmacy in Kuranji District, but data that meets the inclusion criteria is only from 25 pharmacy with 25 participants who were willing to take part. This research consisted of 16 pharmacists and 9 non-pharmacist employees. Only 37.5% (6 of 16) of correct drug recommendations were given by pharmacists, and 33.3% (3 of 9) of correct drug recommendations were given by non-pharmacist employees. There are still many errors in recommending drugs for this case with a total average of correct administration only 36%. The right choice of drugs is Bromhexin and Acetylcysteine, because the other drugs chosen are drugs that should be given with a doctor's prescription, drugs with polypharmacy, which are recommended are apparently not drugs or are not the drugs of first choice for this case.

Keywords: *Cough, Pharmacy, Recommendation*

Supporting Agencies : Source of research funding by Faculty Of Pharmacy Andalas University with number of contract 14/UN.16.10.D/PJ.01./2023

Indexing : Clinical Pharmacy

OP-063

STANDARDIZATION AND ANTIDIARRHEAL ACTIVITY OF ETHANOL FRACTION OF MELINJO LEAVES (GNETUM GNEMON L. (LINN.)) ON MALE WHITE RATS WISTAR STRAIN IN SALMONELLA TYPHI BACTERIA INDUCED

Herlina[1]*, Shaum Shiyan[1], Viva Starlista[1], Luthfiyah Amirah[1]

[1]Jurusan Farmasi Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Sriwijaya
*Corresponding author. Email: rinaafdil@gmail.com

ABSTRACT

One of the plants that can be used to treat diarrhea is melinjo (*Gnetum gnemon* L. (Linn.)). Tannin compounds in melinjo leaves which are astringent are thought to have antidiarrheal effects. This study aimed to evaluate the antidiarrheal activity of the ethanol fraction of melinjo leaves. This study used male white rats of wistar strain induced by *S.typhi* bacteria. The test animals were divided into 6 groups, namely a negative control group (1% NaCMC), a positive control group (Chloramphenicol), and 4 treatment groups at doses of 30, 60, 90, and 120 mg/kgBW. The results of the characterization of the ethanol fraction of melinjo leaves obtained water soluble fraction content of 39.33%; ethanol soluble fraction content of 24,00%; water content 7.67%; drying shrinkage 8.32%; total ash content of 8.00%; acid insoluble ash content 7.51%; microbial contamination test 0 cfu/g; and test for metal contamination of Pb <0.068 mg/kg. Doses of 30 mg/kgBW and 60 mg/kgBW were able to reduce the number of bacterial colonies with the number of colonies of 18.4 x 105 and 14 x 105 (cfu g-1). The results of statistical analysis of doses of 90 mg/kgBW and 120 mg/kgBW had no significant difference with the positive control group ($p>0.05$) and were able to reduce the number of bacterial colonies equivalent to the positive control group to zero after 12 days of treatment. The dose of 120 mg/kgBW was the most effective as antidiarrheal based on the observed parameters of antidiarrheal activity. The total tannin content contained in the ethanol fraction of melinjo leaves was 165,736 mgTAE/g fraction. The effective dose (ED50) of the ethanol fraction of melinjo leaves as an antidiarrheal was 111,724 mg/kgBW.

Keywords: *Melinjo leaves, antidiarrheal, ethanol fraction, Salmonella typhi*

OP-064

DETERMINATION OF SUN PROTECTION FACTOR (SPF) VALUE AND SCREENING PHYTOCHEMICAL OF EXTRACT ETHANOL LEAF SURIAN (TOONA SINENSIS)

Uce Lestari[1,2]* Muhaimin Muhaimin[1,3] Anis Yohana Chaerunisaa[4] and Wawan Sujarwo[5]

[1]Doctoral Study Program, Faculty of Pharmacy, Universitas Padjadjaran, Jl. Raya Jatinangor Km 21,5, Sumedang 45363, Indonesia
[2]Departement of Pharmacy, Faculty of Medicine and Health Sciences, Universitas Jambi, Ma Jambi 36361, Indonesia
[3]Department of Pharmaceutical Biology, Faculty of Pharmacy, Universitas Padjadjaran, Sumedang 45363, Indonesia
[4]Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmacy, Universitas Padjadja-ran, Sumedang 45363, Indonesia
[5]Ethnobotany Research Group, Research Center for Ecology and Ethnobiology, National Research and Innovation Agency (BRIN), Cibinong, Bogor 16911, Indonesia
*Corresponding author. Email: uce22001@mail.unpad.ac.id

ABSTRACT

Facial skin that is often exposed to direct sunlight through daily activities can have a negative impact on the skin in the long term, such as melasma, hyperpigmentation, black skin, sunburn and even skin cancer. Therefore, one effort to protect the skin from exposure to direct sunlight is by using sunscreens that come from nature. Surian leaves (*Toona sinensis*) contain secondary metabolites such as flavonoids which have antioxidant activity. Antioxidant activity is related to photoprotective activity, so it can be used as a sunscreen. This study aims to determine the phytochemical screening of the ethanol extract of surian leaves (*Toona sinensis*) and determine the SPF value of the ethanol extract of surian leaves (*Toona sinensis*). Phytochemical screening was carried out using a qualitative test while determining the SPF value using the Mansur method. The results showed that the ethanol extract of surian leaves contained polyphenols, tannins, flavonoids, monoterpenoids, quinones and saponins with a total flavonoid content of 33.19% while an SPF value of 29. From this study it can be concluded that the ethanol extract of surian leaves (*Toona sinensis*) contains flavonoid compounds with ultra protection against ultraviolet rays and has the potential to be used as a sunscreen.

Keywords: *Toona sinensis, antioxidant, Sun Protection Factor*

Supporting Agencies : This research was funded by the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia as a Doctoral Dissertation Grant in 2023. It is part of the first author's doc-toral study, which is funded by the National Research and Innovation Agency (BRIN). Further-more, the article processing charges (APC) were funded by Padjadjaran University.

Indexing : Pharmaceutical technology, Pharmaceutical

OP-065

THE RATIONALITY OF USING ANTIBIOTICS IN A QUALITATIVE AND QUANTITATIVE PERSPECTIVE IN COMMUNITY-ACQUIRED PNEUMONIA PATIENTS

Rosaria Ika Pratiwi [1,3]*, Agung Endro Nugroho[2], Ika Puspita Sari[2], Tri Murti Andayani[2]

[1]Program Doctoral Faculty of Pharmacy, Universitas Gadjah Mada, Yogyakarta, Indonesia
[2]Departement of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Gadjah Mada, Yogyakarta, Indonesia
[3]Departement of Pharmaceutics, Program Study of Pharmacy, Politeknik Harapan Bersama, Central Java, Indonesia
*Corresponding author. E-mail: nugroho_ae@ugm.ac.id

ABSTRACT

Antibiotics serve an important role in the treatment of community-acquired pneumonia (CAP), and while the using of antibiotics is becoming a routine practice for the treatment of diseases, more than half of all prescribed drugs are inappropriately used. This study aims to identify the rationality of using antibiotics, the correlation between the rationality of using antibiotics with clinical outcomes, and to calculate a defined daily dose (DDD) /100 bed days. The using antibiotics was calculated in a DDD/100 bed days, and the rationality of using empirical and definitive antibiotics was analyzed descriptively using the Gyssens category. The correlation between the rationality of using antibiotics with clinical outcomes was analyzed using the chi-square test. The study enrolled 94 adult patients diagnosed with CAP based on the inclusion and exclusion criteria. The patient was admitted to the non-VIP ward of RSUP Dr. Sardjito, Yogyakarta, Indonesia, from September to November 2022. The study results show that the using of empirical antibiotics was rational (63.51%) and irrational (36.49%), and the using of definitive antibiotics was rational (57.14%) and irrational (42.86%). There is no correlation between the rationality of using empirical antibiotics with clinical outcomes (Pvalue 0.378) and the rationality of using definitive antibiotics with clinical outcomes (Pvalue 0.221), and there was a very large the using antibiotics over the World Health Organization DDD standard, including ciprofloxacin tablets, levofloxacin infusion, azithromycin tablets, ceftriaxone injection, gentamicin injection, and cefixime tablets.

Keywords: *Clinical Outcomes, Defined Daily Dose, Empirical Definitive Therapy*

OP-066

TOTAL FLAVONOID CONTENT, ANTIOXIDANT ACTIVITY, AND UROKINASE TYPE PLASMINOGEN ACTIVATOR INHIBITOR OF CANANGA ODORATA AND LANTANA CAMARA LEAVES EXTRACT

Bina Lohita Sari[1]*, Syaikhul Aziz[2], Aulia Ilmiyawati[3], Euis Julaeha[4], Dien Puji Rahayu[5], Made Bagus Auriva Mataram[6], Eli Yulia Sukmawati[1], Laili Salsabila Suddin Putri[1]

[1]Department of Pharmacy, Faculty of Mathematics and Natural Science, Universitas Pakuan, Bogor, West Java, Indonesia
[2]Pharmacy Study Programme, Department of Science, Institut Teknologi Sumatera, Lampung, Indonesia
[3]Department of Chemistry, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Bogor, West Java, Indonesia
[4]Department of Chemistry, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Bandung, Indonesia
[6]Department of Clinical Pathology, Faculty of Veterinary Medicine, Universitas Brawijaya, Malang, Indonesia
*Corresponding author. Email: binalohitasari@unpak.ac.id

ABSTRACT

Flavonoids are recognized as active polyphenolic antioxidants and anticancer agent, playing a crucial role in impeding cancer progression and metastasis by inhibiting proteolytic enzyme such as urokinase-type plasminogen activator (uPA). According to literature, *Cananga odorata* (*C. odorata*) and *Lantana camara* (*L. camara*) leaves possess anticancer properties through uPA enzyme inhibition.
Response surface methodology (RSM) was used to optimize the conditions of ultrasonic-assisted extraction (UAE) from the two plant leaves extract (*C. odorata and L. camara*), in order to determine total flavonoid content (TFC) and antioxidant activity (AA). Three-factor and three-level response analysis experiment (ethanol concentration, time, temperature) were designed by Box-Behnken (BBD) to obtain optimal extraction parameters. Analysis of TFC and antioxidant activity was conducted using the aluminum chloride colorimetric assay and DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging test. The optimized UAE conditions yielded the highest TFC and strongest AA, facilitating subsequent uPA inhibitory through spectrofluorometry. The result showed that *L. camara* leave extract exhibited significant higher TFC higher and stronger IC50 AA at 30.64 mg/g QE and 67.77 µg/mL, respectively, than *C. odorata*. Furthermore, the optimal extraction parameters were 40.54 0C, 73.5% ethanol, and 31.4 min. The TFC and AA of *C. odorata* leave extract was 11.28 mg/g and 70.31 µg/mL with optimal extraction parameters of 44.5 0C, 78.97% ethanol, and 10.12 min. These outcomes indicate that RSM analysis influences the determination of TFC and AA, leading to the identification of optimal extraction conditions for maximizing uPA inhibitory activity.

Keywords: *Total flavonoid content, antioxidant activity, uPA inhibitor, leaves extract*

Supporting Agencies : Source of research funding is "Program Pendanaan Riset dan Inovasi untuk Indonesia Maju (RIIM) Gelombang 3 (2023)" from National Research and Innovation Agency. Number of contract +62 815-9999-258

Indexing : Pharmaceutical Chemistry

OP-067

EVALUATION OF THE ANTI-TYROSINASE-ANTI-AGING POTENTIAL AND METABOLITE PROFILING FROM THE BIOACTIVE FRACTION OF CORN COB (ZEA MAYS L.)

Armita Harahap[1], Suci Triamarta[1], Dinda Kharisma[1], Wiwik Hanifah[1], Muhammad Iqbal[1], Nurwahidatul Arifa[2'3], Friardi Ismed[1'2*]

[1]Faculty of Pharmacy, Andalas University, Padang 25163, Indonesia
[2]Laboratory of Biota Sumatera, Andalas University, Padang 25163, Indonesia
[3]Faculty of Pharmacy, Baiturrahmah University, Padang 25586, Indonesia
*Corresponding author. Email: friardi@phar.unand.ac.id

ABSTRACT

Maize (*Zea mays* L.) is a crop that has been widely cultivated in Indonesia. Using corn kernels on a large scale will produce much corn cob waste, usually unused. According to the literature search, corn cobs' phytochemical studies and pharmacological activities still need to be improved. This study aims to determine the content of secondary metabolites (metabolite profiling) and their antityrosinase and anti-aging potential. Corn cobs were macerated with methanol and fractionated with n-hexane, ethyl acetate, and butanol. The phytochemical profiling approach of the methanol extract was performed by liquid chromatography-mass spectra (LC-MS/MS). Anti-tyrosinase and anti-aging bioactivity were evaluated by thin layer chromatography (TLC)-bioautography and IC50 spectrophotometrically. The evaluation results show that the Butanol fraction leads to a potential value (IC50 99.92 ug/ml). Several compounds, especially flavonoid compounds (including catechin; kaempferol 3-arabinofuranoside 7-rhamnoside; 6,8-Di-C-beta-D-arabinopyranosylapigenin; 5,7-Dihydroxy-8,4'-dimethoxyisoflavone) were identified by LC-MS/MS by comparing the molecular mass of MS/MS data with literature data.

Keywords: *Corn cob, Anti-tyrosinase, Anti Aging, LC-MS/MS, TLC-Bioautography*

Supporting Agencies : Source of research funding by PKM-RE 2023 with number of contract 027/E2/PPK/BAP-1/PKM/2023

Indexing : Pharmaceutical Chemistry

OP-068

THE EFFECT OF ARUMANIS MANGO RIND (MANGIFERA INDICA L) EXTRACT AS ANTIDIABETIC IN RATS MODEL

Ifmaily[1]*, Afni Firla[1], and Putri Rizki Fitriani[2]

[1]Faculty of Pharmacy, Perintis Indonesia University, Padang, West Sumatera, Indonesia
[2]Faculty of Medical, Andalas University, Padang, West Sumatera, Indoinesia
*Corresponding author. Email: ifmaily.72baru@gmail.com

ABSTRACT

Rind of arumanis mango (*Mangifera indica* L) is one of organic wastes that contain flavonoid compounds. This study aims to determine the effect of arumanis mango rind extract that decreasing blood glucose levels in alloxan-induced rats, to determine the most effective dose in decreasing blood glucose levels in diabetic rats and the histopathological description of pancreatic glands in diabetic rats. This research used an experimental method using 24 rats, divided into 6 groups consisting of I negative control, II positive control, III, IV, V with varying doses of 100 mg/kgbw, 200 mg/kgbw, 400 mg/kgbw, and VI comparison group (glibenclamide). Groups II until VI were induced alloxan of 150 mg/kgbw for 3 days, then the extract was given to each groups for 14 days. Blood glucose levels were measured via the lateral vein tail before and after induction and after administering the test preparation to all groups using a glucometer. The results of one-way ANOVA data analysis showed significantly different results ($p<0.05$) that arumanis mango rind extract had an effect on decreasing blood glucose in diabetic rats with an effective dose of 400 mg/kgbw and histopathology desricptive results showed that arumanis mango rind extract could reduce damage to the pancreatic islet of Langerhans with histopathology of the exocrine glands and endocrine glands at dose III was better than at doses I and II.

Keywords: *Arumanis Mango Rind, Antidiabetic, Extract, Histopathology, Rats*

Indexing : Pharmacology

OP-069

IDENTIFICATION OF LARD ON PROCESSED PRODUCTS IN MEDAN CITY USING UV-SPECTROPHOTOMETER WITH LINEAR DISCRIMINANT ANALYSIS AND PRINCIPAL COMPONENT ANALYSIS METHODS

Hafid Syahputra[1]*, Sri Yuliasmi[1], Fathur Rahman Harun[1], Fadilla Azzahra Sukma[2], Dita Elnora Siregar[2], Aliyya Noviyanti Akhraf[2]

[1]Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, 20155, Indonesia
[2]Undergraduate Student, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, 20155, Indonesia.
*Corresponding author. Email: hafid@usu.ac.id

ABSTRACT

Processed meat products are highly popular among the community. However, deceptive traders sometimes adulterate these products with pork elements, necessitating thorough inspections. The qualitative detection of lard in processed products can be analyzed using UV spectrophotometry with chemometric techniques such as Linear Discriminant Analysis and Principal Component Analysis. These methods facilitate data analysis derived from spectra and wavelengths, enabling the categorization of objects and providing high accuracy. This study aimed to determine whether processed products in Medan contain lard using UV spectrophotometry, Linear Discriminant Analysis, and Principal Component Analysis methods. The highest fat yield was obtained from lard at 14.24%, while the lowest was from chicken fat at 7.00%. The maximum wavelength results for control samples were 234 nm for chicken fat, 237 nm for beef fat, and 268 nm for lard. Data processing using Linear Discriminant Analysis and Principal Component Analysis showed that the processed products of three random samples, nugget, meatball, and sausage type A and C, fell within the same quadrant as chicken fat. Meatball and sausage type B were in the same quadrant as beef fat. Based on the identification of lard in processed products in Medan City using UV spectrophotometer by LDA and PCA, all random samples of nuggets, meatballs, and sausages do not contain lard, and this method can classify chicken fat, beef fat, lard well.

Keywords: *Identification, Lard, Processed Products, UV Spectrophotometer, Chemometric*

Supporting Agencies : No source of research funding contract +628117506033

Indexing : Pharmaceutical Chemistry

OP-070

IN SILICO ANALYSIS OF PHYSIO-CHEMICAL PROPERTIES, TARGET POTENTIAL AND ANTI-INFLAMMATION ACTIVITY OF TINOCRISPOSID

Annisa Fauzana[1]*, Purnawan Pontana Putra[1], Dachriyanus[1]

[1]Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatera, Indonesia
*Corresponding author. Email: annisafauzana@phar.unand.ac.id

ABSTRACT

Tinokrisposid is an isolated pure compound from *Tinospora crispa*'s stem, which is, in nature, available in its glycoside form (tinokrisposid glycoside). This compound provides some pharmacological activities, such as anti-inflammation, with an unknown mechanism of action. This research aims to determine the physio-chemical properties and potential target of tinokrisposid and tinokrisposid glycoside and their affinity to protein targets of anti-inflammation compounds, namely MMP-2, COX-2, and 5-LOX. The physio-chemical properties and target potential were determined using the Swiss Potential Target, and the affinity to target proteins was determined using Autodock Vina. The result showed that the log P value of tinokrisposid and tinokrisposid glycoside is 3.45 and 1.06, respectively, and the Polar Surface Area (PSA) is 65.74 and 165.12, respectively. Tinokrisposid meets all of Lipinski's rules, while the glycoside form showed two violations. Both tinokrisposid and tinokrisposid glycoside show the highest binding probability with Family A G Protein-Coupled receptor. Autodock Vina results showed that tinokrisposid glycoside has an affinity to bind with proteins of MMP-2, COX-2, and 5-LOX. In conclusion, tinokrisposid provides better drug-likeness than its glycoside form. Moreover, there is a high probability that tinokrisposid glycoside provides its anti-inflammation effect through interaction with MMP-2, COX-2, and 5-LOX protein.

Keywords: *Tinokrisposid, tinokrisposid glycoside, antiinflammation, phsyco-chemical properties, target potential, Autodock Vina*

Supporting Agencies : This research was funded by Faculty of Pharmacy, Universitas Andalas

Indexing : Pharmaceutical Chemistry

OP-071

EXTRACTION TIME EFFECT ON ACTIVE COMPOUNDS LEVELS IN CAT WHISKERS (ORTHOSIPHON ARISTATUS (BLUME) MIQ.)

Fahrauk Faramayuda[1]*, Soraya Riyanti[1], Suryani[1], Ari Sri Windyaswari[1], Shindi Juni Karmila[1], Rizka Khoirunnisa Guntina[1]

[1]Faculty of Pharmacy Universitas Jenderal Achmad Yani, Cimahi. West Java. 40153. Indonesia
*Corresponding author. Email: fahrauk.faramayuda@lecture.unjani.ac.id

ABSTRACT

Determine the best time to boil cat whiskers by observing the impact of boiling time on the quantities of rosmarinic acid in cat whiskers. For the extraction process, water is boiled for 10, 20, and 30 minutes at 90 degrees Celsius. High-Performance Liquid Chromatography (HPLC) was used to measure the quantities of rosmarinic acid and validate the analytical procedures in terms of accuracy, precision, linearity, and specificity. The one-way ANOVA test and Duncan's test were used to analyse the data; a p-value of 0.05 was used to indicate a statistically significant difference. The lowest quantities of rosmarinic acid were found in the study's results during a shorter boiling duration of 10 minutes, or 2.07% w/w. The highest concentrations of rosmarinic acid were found after a prolonged boiling period of 20 minutes, at 2.32 % w/w. Meanwhile, rosmarinic acid levels dropped to 2.15 % w/w after a 30 minute overboiling period. Rosmarinic acid levels from the three boiling durations differed significantly, according to statistical analysis ($p=0.000$; $p<0.05$). It was determined that 20 minutes was the ideal boiling duration for extracting rosmarinic acid from purple cat whiskers.

Keywords: *Cat whiskers, Purple variety, Rosmarinic acid, Heating time, Validation, HPLC*

Supporting Agencies : Ministry of Culture Education, and Technology with grant number 074/E5/PG.02.00. PL/2023

Indexing : Pharmaceutical Biology

OP-072

STUDY OF ACTIVE ISOLATED COMPOUNDS FROM SUNGKAI LEAF (PERONEMA CANESCENS JACK) AS IMMUNOSTIMULANT FROM EXPOSURE OF THE SARS-COV-2 VIRUS ANTIGEN TO NATURAL KILLER CELLS

Dwisari Dillasamola[1]*, Yufri Aldi[1], Fatma Sri Wahyuni[1], Rauza Sukma Rita[2], Yohannes Alen[1], Dachriyanus[2]

[1]Faculty of Pharmacy, Universitas Andalas, Limau Manis, Pauh, Padang City, West Sumatera, Indonesia.
[2]Faculty of Medicine, Universitas Andalas, Limau Manis, Pauh, Padang City, West Sumatera, Indonesia
*Corresponding author. E-mail: dwisaridillasamola@phar.unand.ac.id

ABSTRACT

SARS-CoV-2 is an illness that attacks the respiratory tract's alveoli lining cells. One approach to tackling it is to strengthen the immune system of the body, which has an organ specifically dedicated to defending against diseases. Among the key components of the body's immune system that defend against the SARS-CoV-2 virus are Natural Killer (NK) cells. Sungkai (*Peronema canescens* Jack) is a plant commonly used by communities to boost their immunity. The aim of this study was to examine the activity and characterization results of Sungkai leaves on Natural Killer cells. Sungkai powder was extracted using a 70% ethanol solvent and evaporated using a rotary evaporator. It was then fractionated using n-Hexane and evaporated using a rotary evaporator to obtain a thick fraction. The thick fraction was then chromatographed, resulting in two isolated compounds that were tested in vivo for their immunostimulatory activity using mice as test animals. The study consisted of five groups, including a normal group and four other groups of white mice that had been exposed to the SARS-CoV-2 virus antigen Moderna vaccine 0.0013 ml. The results showed that stigmasterol was more effective than Bis(2-ethylhexyl) phthalate in increasing Natural Killer cells' immunostimulant activity.

Keywords: *SARS-CoV-2, Sungkai (Peronema canescens Jack), Natural Killer (NK), pthalate, Stigmasterol, Immunostimulant*

OP-073

MICROENCAPSULATION BISOPROLOL FUMARATE WITH EUDRAGIT E PO BY SOLVENT EVAPORATION METHOD

Azhoma Gumala[1], Febriyenti Febriyenti[1]*, Fithriani Armin[2], Zahrah Yulindra[1]

[1]Pharmaceutics Department, Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia
[2]Pharmaceutical Chemistry Department, Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia
*Corresponding author. Email febriyenti@phar.unand.ac.id

ABSTRACT

Bisoprolol fumarate is one of beta-adrenergic blocker that has poor palatability due to its bitter taste. The microencapsulation technique using polymer such as Eudragit EPO is a simple and cheap method to mask the unpleasant taste of drug. The aim of this study was to develop and optimize bisoprolol fumarate Eudragit EPO microcapsule formula by double emulsion solvent evaporation.

We prepared bisoprolol fumarate- Eudragit EPO microcapsule in three different ratios 1: 3 (F1), 1: 4 (F2), and 1: 5 (F3). We characterized each of the microcapsule formula using Fourier Transform Infra-Red, Scanning Electron Microscopy, particle size analyzer, and investigated the drug loading, entrapment efficiency, solubility in pH 6.8, and the difference between dissolution profile of each microcapsule using one-way ANOVA.

Infra-Red spectrum showed no chemical interaction between bisoprolol fumarate and Eudragit E PO in microcapsules. The morphology and structure of F1 microcapsule was irregular sphere, while F2 and F3 were regular spheres. The average particle distribution of microcapsules was 24.765 µm (F1), 28.245 µm (F2), and 40.634 µm (F3). The drug loading was 7.691 % (F1), 8.922 % (F2), and 9.012 % (F3). The encapsulation efficiency was 4.980 % (F1), 5.857%(F2), and 6,285 %(F3). The average amount of bisoprolol fumarate released in pH 6.8 was 2.113% (F1), 1.954% (F2), and 1.619% (F3). The dissolution profile between each formula was statistically different.

As the low value of drug loading and encapsulation efficiency in each formula, we concluded that the microencapsulation formula with Eudragit EPO by solvent evaporation method is not effective to entrap bisoprolol fumarate.

Keywords: *Bisoprolol fumarate, Eudragit E PO, microencapsulation, solvent evaporation*

Indexing: Pharmaceutical Technology

OP-074

FORMULATION OF ANTI-BLACKHEAD RUBBER MASK FROM PURIFIED GAMBIER (UNCARIA GAMBIR [HUNTER] ROXB.)

Hafizhatul Akrami[1], Nova Syafni[1], Rini Agustin[1]*

[1]Department of Pharmaceutical Technology, Faculty of Pharmacy, Andalas University, Padang, 25163, Indonesia
*Corresponding author. Email: riniagustin@phar.unand.ac.id

ABSTRACT

Purified gambier (*Uncaria gambir* [Hunter] Roxb.) contains catechins with antioxidant and antibacterial properties that hold the potential for application in cosmetic formulations such as rubber masks, which are powdered masks that can be applied with water and possess peeling-off properties. This study aimed to formulate purified gambier into a rubber mask, evaluated its physical properties, and identified the levels of catechins contained in it. These masks were formulated into three formulas with a purified gambier percentage of 5% and variations of two film formers, which were 30, 35, 40 % for HPMC and 15, 12.5, 10 % for chitosan. The three rubber mask formulas had a brown color, smooth textures, the gambier odor, visually homogeneous, particle sizes at 112.24 – 116.39 µm, moisture values at 3.9 – 7.04%, pH of 6, drying times of 8 to 15 minutes, adhesive power of > 10 seconds and remained stable for 21 days at 4±2°C and 27±2°C. The actual catechin content in formula I, II, and III were 0.89%, 1.09%, and 1.39%, respectively. The best formula was formula III, which contained 40% HPMC and 10% chitosan due to the fastest drying time of 8.36 minutes ± 19 seconds and the highest catechins content at 1.39%.

Keywords: *cosmetics, HPMC, chitosan, powdered masks, peeling-off*

Indexing: Pharmaceutical Technology

OP-076

DEVELOPMENT AND CHARACTERIZATION OF SURFACE SOLID DISPERSION MORINGA OLEIFERA LEAF EXTRACT MICROCRYSTALLINE CELLULOSE BY CO-GRINDING METHOD

Karina Citra Rani[1]*, Paramitha Prameswari[2], Cheryl Matulatan[2], Finna Setiawan[3], Nikmatul Ikhrom Eka Jayani[3]

[1]Departement of Pharmaceutics, Faculty of Pharmacy, University of Surabaya, Surabaya,60294, Indonesia
[2]Faculty of Pharmacy, University of Surabaya, Surabaya,60294, Indonesia
[3]Department of Pharmaceutical Biology, Faculty of Pharmacy, University of Surabaya, Surabaya 60294, Indonesia
*Corresponding author. Email: karinacitrarani@staff.ubaya.ac.id

ABSTRACT

The extract of *Moringa oleifera* leaves contain flavonoid compounds which potential as antioxidant source. The development of *Moringa oleifera* leaves extract into herbal product is still limited because the difficulty to handle the consistency, hygroscopicity, and low solubility of the extract. Surface solid dispersion (SSD) is a versatile method to improve not only the physical characteristics but also the solubility of the extract. The aim of this study was to improve the characteristics of *Moringa oleifera* leaf extract through SSD using microcrystalline cellulose as carrier. The preparation of the SSD was conducted by co-grinding method at two ratios of extract and carrier (1:2 and 1:4). The results of this study revealed that SSD was able to entrap the extract in the surface area of microcrystalline cellulose. Hence, the SSD powder performed better moisture content and flowability. The characterization of thermal characteristics and crystallinity also performed the reduction of crystal lattice regularity compared to the pure extract. It was observed from the reduction of enthalpy and distinctive peak intensity. The total flavonoid content of SSD 1:2 was 14.70±0.35 mg QE/g, whereas SSD 1:4 was 7.00±0.07 mg QE/g. The solubility of flavonoid compound from SSD 1:2 was 62.26±0.62 ppm, while the solubility of SSD 1:4 was 63.58±0.62 ppm. The solubility of flavonoid compound from SSD preparation increased about 1.16-fold compare to the physical mixture. The SSD powder with 1:2 and 1:4 ratio showed IC50 value 539.38 ppm and 524.44 ppm respectively. The preparation of SSD of Moringa oleifera leaf extract can improve physical and chemical characteristics of the extract prior to formulation.

Keywords: *Moringa oleifera leaf extract, microcrystalline cellulose, surface solid dispersion, co-grinding*

Supporting Agencies : Source of research funding by LPPM University of Surabaya with number of contract 9/II-2022/ST-TA/FF/III/2023

Indexing : Pharmaceutical Technology

OP-077

ENCAPSULATION OF PHASE CHANGE MATERIAL INTO CELLULOSE AS A FEVER COMPRESS

Raudhatul Fadhilah[1'3]* and Doddy Irawan[2'3]

[1]Department of Chemistry, Universitas Muhammadiyah Pontianak, Pontianak, West Kalimantan 78124, Indonesia
[2]Department of Mechanical Engineering, Universitas Muhammadiyah Pontianak, Pontianak, West Kalimantan 78124, Indonesia
[3]Research Centre of Energy and Nanomaterials, Universitas Muhammadiyah Pontianak, Pontianak, West Kalimantan 78124, Indonesia
*Corresponding author. Email: raudhatul.fadhilah@unmuhpnk.ac.id

ABSTRACT

The instant fever compresses on the market have a weakness: they are only used once. Therefore, it is necessary to develop an instant compress that can be used repeatedly. Phase-change materials (PCM) have unique properties because they can absorb and release heat at certain temperatures. However, PCM has the disadvantage of being in the form of a candle. Therefore, PCM must be encapsulated with other materials to strengthen its properties. In this research, a PCM-cellulose-based fever compress will be developed. The method used goes through 4 stages, namely: (1) cellulose synthesis; (2) PCM encapsulation on cellulose; (3) printing of fever compresses; and (4) analysis and testing of the ability of the compress to absorb heat. The research results show that fever compresses can reduce heat from 40 oC to 36 oC in 10 minutes. Adhesion test results show that the fever compress can be sticky for up to 24 hours. The best combination of fever compresses is in the 20% eicosane cellulose encapsulation formulation. Fever compresses can be done repeatedly, with the same results after being done three times.

Keywords: *cellulose, compress, fever, phase change material, thermal*

Supporting Agencies: Source of research funding by Ministry of Education, Culture, Research and Technology of the Republic of Indonesia

Indexing: Pharmaceutical Chemistry

OP-078

ACTIVITY OF PEGAGAN EMBUN EXTRACT (HYDROCOTYLE SIBTHORPIOIDES LAM.) IN CAPSULE DOSAGE FORM TO SGPT AND SGOT LEVELS IN HUMANS

Salman Umar[1], Adinny Julmiza[1], Afriwardi Afriwardi[2], Yufri Aldi[1]

[1]Department of Pharmacology, Faculty of Pharmacy, Universitas Andalas
[2]Department of Physiology Faculty of Medicine, Universitas Andalas
*Corresponding author. Email: yufrialdi@phar.unand.ac.id

ABSTRACT

Pegagan embun (*Hydrocotyle sibthorpioides* Lam.) is one of the herbal plants that used as an immunostimulant. This study aims to determine the activity of administering *Hydrocotyle sibthorpioides* Lam. extract in capsule dosage form on SGPT and SGOT levels in humans. The participants involved 20 healthy volunteers aged 20-25 years who were divided into 2 groups with placebo as a comparison. Treatment group were given capsules containing *Hydrocotyle sibthorpioides* Lam. extract at a dose of 67 mg and the placebo group contained lactose which was consumed for 3 days. Measurement of SGPT and SGOT levels was conducted before and after consuming the test capsules. The examination of SGPT and SGOT levels was carried out using a 5010 v5+ photometer. The results of SGPT levels before the capsules were 28.79 U/L for placebo and 28.59 U/L for the test preparation group. After administration of *Hydrocotyle sibthorpioides* Lam. extract capsules were 24.26 U/L and for placebo 32.86 U/L. While the measurement results of SGOT levels before being given the capsule were 17.37 U/L for placebo and 17.71 U/L for the test preparation group. After administration of *Hydrocotyle sibthorpioides* Lam. extract capsules, it was 14.56 U/L and 18.52 U/L for placebo. Based on the results of the study, it shows that *Hydrocotyle sibthorpioides* Lam. extract causes a significant decrease in SGPT and SGOT levels ($p<0.5$) in humans. This indicates that the extract of *Hydrocotyle sibthorpioides* Lam. is relatively non-toxic and safe for public use as an immunostimulant herbal medicine.

Keywords: *Hydrocotyle sibthorpioides Lam, ethanol extract of pegagan embun, Volunteers, SGPT, SGOT.*

Supporting Agencies : Source of research funding by the Faculty of Pharmacy, Andalas University with contract number : 13/UN16.10.D/PJ.01./2023

Indexing : Pharmacology

OP-079

COST-EFFECTIVENESS ANALYSIS OF COMBINATION SALBUTAMOL-IPRATRORIUM AND SALBUTAMOL SINGLE IN PATIENTS ASTHMA OF DR. DRADJAT PRAWIRANEGARA SERANG HOSPITAL

Yusransyah Yusransyah[1]*, Ristiani Dewi Maharani[1], Sofi Nurmay Stiani[1], Baha Udin[1], Iqlima Raina[1]

[1]Pharmacy Study Progran, Sekolah Tinggi Ilmu Kesehatan Salsabila Serang, Serang, Banten, 42211 Indonesia
*Corresponding author. Email: yusransyah@iai.id

ABSTRACT

The treatment of asthma requires attention to achieve efficient and effective therapeutic outcomes. The most commonly used treatments for managing asthma attacks are single salbutamol therapy and a combination of salbutamol and ipratropium. This research aimed to determine which treatment is more cost-effective between single salbutamol therapy and the salbutamol-ipratropium combination therapy for asthma patients at Dr. Dradjat Prawiranegara Hospital. The study was conducted from a payer's perspective, with data collection done retrospectively using purposive sampling. Data were extracted from the medical records of asthma patients in the outpatient department of Dr Drajat Prawiranegara Serang Hospital from January to December 2022. The pharmacoeconomic analysis used the Cost-Effectiveness Analysis (CEA) method. The study included 12 subjects, consisting of 6 patients in the single salbutamol group and six in the salbutamol-ipratropium combination group. Based on the calculations, the Average Cost-Effectiveness Ratio (ACER) for the single salbutamol group was IDR 10,909, while the combination group was IDR 10,800. This indicates that the salbutamol-ipratropium combination group is more cost-effective than the single one.

Keywords: *asthma, cost-effectiveness, salbutamol, ipratropium*

OP-080

ANTIOXIDANT ACTIVITY OF FRACTIONATED MANGOSTEEN PEEL EXTRACT (GARCINIA MANGOSTANA)

Ari Widayanti[1'2],* Mahdi Jufri[1], Silvia Surini[1], Berna Elya[1]

[1]Faculty of Pharmacy, Indonesia University, Depok, Indonesia.
[2]Faculty Pharmacy and Sciences, Universitas Muhammadiyah Prof. Dr. Hamka, Jakarta, Indonesia
*Corresponding author. Email: ariwidayanti@uhamka.ac.id

ABSTRACT

Determination of the IC50 value of the partition fraction was carried out to see the antioxidant activity of the ethanol extract of mangosteen peel (*Garcinia mangosteen*). The research began with maceration of mangosteen peel with ethanol solvent. Next, the mangosteen peel extract was measured for mangosteen alpha content using a TLC-Densitometer, obtaining a level of 29.11%. The ethanol extract of mangosteen peel was further partitioned with the solvent n-hexane, dichloromethane and water and then evaporated. All fractions were then tested for antioxidant activity using the DPPH method with a comparison of Quercetin. From the partition results, the IC50 value for each n-hexane fraction was 50.65, the dichloromethane fraction was 34.66, and the water fraction was 45.72 ppm. The dichloromethane fraction showed the best antioxidant activity with an IC value of 50 ppm. Next, the dichlormethane fraction was tested for solvent content using Gas Chromatography (GC). The result is that there is no solvent in the dichlormethane fraction. The three resulting fractions were tested for active content using UHPLC. The results were, water fraction 0%, N-hexan fraction 25.18% and DCM fraction 31.23%.

Keywords: *Antioxidant Activity, Dichlormethan Fraction, IC50, GC, UHPLC, Alfa-Mangostin*

Supporting Agencies : Source of research funding from Ministry of Education and Culture, Research and Technology grants

Indexing : Pharmaceutical Technology

OP-081

DETERMINATION OF TOTAL ANTIOXIDANT AND PHENOLIC CONTENTS OF PLANT EXTRACTS AS BIOREDUCTORS IN THE FORMATION OF SILVER NANOPARTICLES

Dini Hanifa[1]*, Akmal Djamaan[1], Refilda[2]

[1]Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia
[2]Faculty of Mathematics and Natural Sciences, Universitas Andalas, Padang, Indonesia
*Corresponding author. Email: dinihanifa@phar.unand.ac.id

ABSTRACT

Silver nanoparticles have unique properties and are widely applied in the medical field, such as drug delivery, wound healing, dental implants, medical devices, biosensing, and diagnostics. Using biological methods to form silver nanoparticles offers advantages over chemical and physical. This green synthesis approach is simple, fast, and eco-friendly. Secondary metabolites in plant extracts, such as phenolics and flavonoids, play a crucial role in silver nanoparticles. This study aimed to determine the total antioxidants and phenolics content in several medicinal plant extracts (*Phyllanthus buxifolius, Pachira aquatica, Peperomia pellucida, Ageratum conyzoides,* and *Piper crocatum*), as well as their potential in reducing silver ions in the formation of silver nanoparticles (AgNPs). Phytochemical screening was conducted on aqueous extract of the leaves of these medicinal plants. Total antioxidant was determined using a modified phenanthroline method, and the total phenolic was determined by the Folin-Ciocalteu method. The synthesis of silver nanoparticles was conducted by mixing silver nitrate solution with each of the plant extracts. Subsequently, the absorption spectra of the resulting colloidal silver nanoparticles were measured. This study showed that *Ageratum conyzoides* leaf extracts exhibited the highest absorbance value among the tested plants in mediating the synthesis of silver nanoparticles. The total antioxidant and phenolic content were 42.76 ± 0.14 mg AAE/g and 57.71 ± 0.47 mg GAE/g, respectively. From the result, it can be concluded that the antioxidants and phenolic compounds present in the extract may be attributed to reducing silver ions to form silver nanoparticles.

Keywords: *Medicinal plants, bioreductor, silver nanoparticles, antioxidants, phenolic content*

OP-082

DEVELOPMENT AND VALIDATION OF A BIOANALYTICAL METHOD FOR THERAPEUTIC DRUG MONITORING OF AMIKACIN IN HUMAN PLASMA USING ULTRA PERFORMANCE LIQUID CHROMATOGRAPHY-TANDEM MASS SPECTROMETRY

Triswanto Sentat[1'2], Henny Lucida[1], Widyati Widyati[3]*,
Hansen Nasif[1], Yahdiana Harahap[3'4], Pandu Harijono[5], Ratih Ratih[6]

[1]Faculty of Pharmacy, Andalas University,
[2]Department of Pharmacy, Institute of Health Science of Samarinda,
[3]Faculty of Military Pharmacy, Republic of Indonesia Defense University
[4]Bioavailability and Bioequivalence Laboratory, Faculty of Pharmacy, Universitas Indonesia
[5]Intensive Care Unit, Central Naval Hospital dr. Ramelan,
[6]Departement of Pharmaceutical Chemistry,Faculty of Pharmacy, University of Surabaya
*Corresponding author. Email: widyati@idu.ac.id

ABSTRACT

The main objectives of this research were to develop and validate a novel, accurate, sensitive, and repeatable bioanalytical method for the determination of amikacin in human plasma employing UPLC-MS/MS. The bioanalytical procedure of amikacin involved a UPLC BEH C18 column as stationary phase, with employed mobile phase consists of 0.1% v/v formic acid and acetonitrile (85:15 v/v). The flow rate was set at 0.1 ml/min, and the column temperature was kept at 30 °C. Kanamycin was selected as an internal standard. Amikacin and kanamycin were determined at a mass-to-charge ratio (m/z) of 585.9>162.9, and at a m/z value of 484.67>162.83, respectively. The amikacin bioanalysis method in plasma matrix at the optimum separation condition was validated by determination of selectivity, linearity, accuracy, precision, recovery, carry over, matrix effect, and stability. The optimum conditions of the sample preparation procedure were obtained through liquid-liquid extraction using trichloroacetic acid, followed by vortex mixing for one minute, and centrifugation at 10,000 rpm for five minutes. The supernatant was collected and injected as 10 µL. Linear response was achieved in the range concentration of 1.0-150.0 µg/ml with R2 0.9997. Accuracy and precision met the requirements with % differences and coefficient variation at all concentration levels less found to be than 15% and at the LLOQ level (1 µg/mL) less than 20%. The validated analytical method of amikacin in plasma is required for therapeutic monitoring of this drug. The data would be valuable for determining or adjusting amikacin doses to enhance patient's safety. A bioanalytical method for determination of amikacin in human plasma by LC-MS/MS was developed and validated. The method selectivity, linearity, accuracy, precision, recovery, as well as carry over, matrix effect, and stability were performed.

Keywords: *Amikacin, Kanamycin, LC-MS/MS, Bioanalytical method, Human plasma, Validation, Theraupeutic Drug Monitoring*

Supporting Agencies : Nil

Indexing : Pharmaceutical Chemistry

OP-083

DETERMINING THE SPF (SUN PROTECTION FACTOR) VALUE OF JUKUT PENDUL ETHANOL EXTRACT USING UV-VIS SPECTROPHOTOMETRY METHOD

Beta Herilla Sekti[1]*, Arini Norma Fauziyah[1], Fendy Yoga Wardhana[1]

[1]Departement of Pharmacy, Faculty of Sains and Technology, ITSK RS DR Soepraoen Kesdam V/Brw
*Corresponding author : betaherilla@itsk-soepraoen.ac.id

ABSTRACT

Sunscreen is a protective cosmetic product. The sunscreen products currently on the market are sunscreens derived from synthetic chemicals such as oxybenzone, avobenson and PABA (p-aminobenzoic acid) derivatives. Excessive use of synthetic compounds can cause allergic and hypersensitive effects. Jukut pendul contains alkaloids, flavonoids and tannins. Flavonoids have potential as sunscreen. because it has a chromophore group (conjugated double bond) which has the ability to strongly absorb light at UV wavelengths, both UV-A (320-400 nm) and UV-B (290-320 nm). This research aims to determine the phytochemical content contained in jukut pendul plants. This research aims to determine the SPF (Sun Protection Factor) value in Jukut Pendul plants. Determination of the SPF value of jukut pendul was carried out using a Uv-Vis spectrophotometer. Absorbance data was taken at a wavelength of 290 nm – 320 nm with intervals of 5 nm. The SPF value of the extract can then be calculated by entering it into the Mansur equation. The extraction process of Jukut pendul is carried out using the remaceration method. The plant parts used are all parts of the jukut pendul plant. The results of the phytochemical screening test show that jukut pendul contains secondary metabolites of alkaloids, flavonoids, tannins and saponins. Based on the data obtained, it is known that the SPF value increases according to increasing extract concentration. The SPF value obtained at a concentration of 100 ppm is 4.5; the concentration of 250 ppm is 11.6 ; at a concentration of 500 ppm is 21 ; at a concentration of 750 ppm it is 30.2 ppm and at a concentration of 1000 ppm it is 37.1.

Keywords: *Sunsreen; Jukut Pendul ; Kyllinga Brevifolia Rotbb*

OP-084

ASSESSING COST AND UTILITY OF GLIMEPIRIDE AS AN ADD-ON TO METFORMIN USE IN DIABETIC PATIENTS

Resna Rerita[1], Hansen Nasif[1], Najmiatul Fitria[1]*

[1]Department Pharmacology and Clinical Pharmacy. Faculty of Pharmacy. Universitas Andalas. Padang. Indonesia
*Corresponding author. Email: najmiatulfitria@@phar.unand.ac.id

ABSTRACT

The treatment of Diabetes Mellitus (DM) disease lasts a long time which can affect the quality of life and costs a lot of money for the patients. Therefore, a study is needed to link patients' quality of life with the costs of treatment received. Currently, glimepiride as an add-on to metformin therapy has been widely used to accelerate DM treatment. This study aimed to assess the burden of cost and units of utility as measured in Quality Adjusted Life Years (QALYs) of both Metformin alone and the combination of Metformin and Glimepiride. Basic data were sourced from medical records of patients visiting Universitas Andalas Hospital in 2022. This study was conducted prospectively by distributing the EQ-5D-5L questionnaire to patients with Diabetes Mellitus patients referred back during January-March 2023. Whereas, the cost data was taken from the hospital information and management system (SIM-RS). There were 69 respondents who were willing to take part in this study, which was divided into two groups (single metformin and glimepiride add-on). In this study, the value of the average cost-utility ratio of metformin alone and the glimepiride add-on was IDR 124.848,12 and IDR 115.768,68 respectively. The metformin group looks cheaper from the average cost-utility ratio value. However, this value was not an endpoint, still, we have to calculate the value of the incremental cost-utility ratio of the glimepiride add-on group in Diabetes Mellitus patients.

Keywords: *Diabetes Mellitus, Metformin, Glimepiride, Utility*

Supporting Agencies: Research fund for the development of junior lecturer, DIPA the Faculty of Pharmacy Universitas Andalas, with number of contract 20/UN 16.10.D/PJ.01./2023

Indexing : Clinical pharmacy

OP-085

ISOLATION OF ENDOPHYTIC FUNGI AND ANTIMICROBIAL ACTIVITY TEST OF GAMBIER PLANTS (UNCARIAGAMBIER (HUNTER)ROXB)

Aried Eriadi[1,2]*, Nurpatma[2], Akmal Djamaan[3], Djong Hon Tjong[4], Dian Handayani[3]

[1] Post Graduate Student, Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia
[2] School of Pharmaceutical Science STIFARM Padang, West Sumatera, Indonesia
[3] Laboratory of Sumatran Biota, Faculty of Pharmacy, Andalas University, Padang, Indonesia
[4] Department of Biology, Faculty of Mathematics and Natural Sciences, University of Andalas, Indonesia
*Corresponding author. Email: aried.eriadi@gmail.com

ABSTRACT

Endophytic fungi are fungi that grow in plant tissue. This study focused on the antimicrobial activity of endophytic fungi from the roots, bark and leaves of the Gambier plant *Uncaria gambir* (Hunter) Roxb taken from South Pesisir Regency, West Sumatra Province. Eleven fungal isolates obtained from this plant were extracted using ethyl acetate solvent. The extract obtained was tested for antimicrobial activity using agar diffusion method. The highest isolates of endophytic fungi are UGB2 in *Staphylococcus aureus* (16.168±0.4) mm and Methicillin resistant *staphylococcus aureus* (16.203±0.6) mm. And it does not inhibit the growth of *Escherichia coli* bacteria and *Candida albicans* fungi. Molecularly identified, the fungal isolate UGB2 is *Aspergillus terreus*. Secondary metabolites of UGB2 fungi contain alkaloids, flavonoids and phenols. This study concluded that endophytic fungi from *Uncaria gambir* (Hunter) Roxb could be developed as a new source of antimicrobial compounds.

Keywords: *Uncaria gambir, endophytic fungi, antimicrobial*

Indexing : pharmaceutical biology

OP-086

PREPARATION OF SPRAY DRIED MULTICOMPONENT CRYSTALS OD TRIMETHOPRIM-MANDELIC ACID AND ITS PHYSICOCHEMICAL CHARACTERIZATION

Lili Fitriani[1], Denanda Sintania[1], Hendrizal Usman[1], Uswatul Hasanah[1], Erizal Zaini[1]*

[1]Department of Pharmaceutics, Faculty of Pharmacy, Universitas Andalas, Padang 25613, Indonesia
*Corresponding author. Email: erizal@phar.unand.ac.id

ABSTRACT

Trimethoprim is one of a broad spectrum antimicrobial compounds which belongs to BCS II with low solubility and high permeability. Thus, this study aimed to prepare a multicomponent crystal (MCC) of trimethoprim-mandelic acid to increase the solubility of trimethoprim. MCC trimethoprim – mandelic acid was prepared by spray drying technique. Physicochemical characterizations were performed by using Powder X-Ray Diffraction (PXRD), Differential Scanning Calorimetry (DSC), Fourier-transform infrared (FT-IR) spectroscopy, Scanning Electron Microscopy (SEM), and polarized microscopy. The solubility test was performed in distilled water. The amount of dissolved trimethoprim was analyzed by High Performance Liquid Chromatography (HPLC) using acetonitrile and phosphoric acid 1 % (10:90 v/v) as mobile phase. MCC characterizations showed a different diffraction pattern from its intact materials according to PXRD analysis, a shifts of the wave number in the FT-IR spectra, and a decrease in the melting point in the DSC thermogram. A new crystalline habits compared to the starting materials are observed with SEM analysis. The particles also showed the color of interference under polarized microscopy, indicating a crystalline phase in nature. The solubility of trimethoprim in MCC increased significantly 3.98 times compared to intact trimethoprim. The MCC trimethoprim-mandelic acid by spray drying technique increased the solubility of trimethoprim.

Keywords: *trimethoprim, mandelic acid, multicomponent crystal, spray drying, solubility*

Supporting Agencies : Faculty of Pharmacy Universitas Andalas for funding this research under scheme Riset Dasar (No. 01/UN16.10. D/PJ.01/2022).

Indexing : Pharmaceutics

OP-087

EFFECT OF COWANIN ON INHIBITION OF MIGRATION OF MCF-7/HER2 BREAST CANCER CELLS BY SCRATCH WOUND HEALING METHOD

Dira Hefni[1], Fanny Dita Zhafirah[1], Dachriyanus[1], Fatma Sri Wahyuni[1]*

[1]Faculty of Pharmacy, Universitas Andalas, 25163, Padang, Sumatra Barat, Indonesia
*Corresponding author. Email: fatmasriwahyuni@phar.unand.ac.id

ABSTRACT

This study aims to determine the effect of cowanin on the inhibition of MCF-7/HER2 breast cancer cell migration. The inhibition of cell migration was carried out using the scratch wound healing method, with the area parameter measured using ImageJ software and calculating the percentage of area closure or cell migration. The results showed that the percentage of area closure after administration of cowanin at a dose of 10.51µM after 24 hours and 48 hours was 24.97% and 50.55%, respectively. Meanwhile, the administration of cowanin at a dose of 21.02 µM was 12.10% and 15.81%, respectively. Negative control gives the percentage of area closing after 24 hours and 48 hours at 16.90% and 26.55%, respectively. The results of statistical tests using two-way ANOVA showed that differences in the dose of the test solution and the incubation time significantly affected the percentage of cancer cell area covered. It can be concluded that cowanin can inhibit the migration of MCF-7/HER2 breast cancer cells.

Keywords: *Cowanin; cell migration; scratch wound healing; metastasis; breast cancer cells MCF-7/HER2*

Supporting Agencies : This Research was funded by Research Fund for Lecturer Development and DIPA of the Faculty of Pharmacy for the 2023 Fiscal Year with contract Number: 01/UN16.10.D/PJ.01./2023.

Indexing : Pharmacology

OP-088

EFFECT OF COWANIN COMPOUNDS ON CYCLIN D1 PROTEIN EXPRESSION IN MCF-7/HER2 BREAST CANCER CELLS USING WESTERN BLOT METHOD

Dira Hefni[1], Angelicha Maysya Nahda[1], Dachriyanus[1], Fatma Sri Wahyuni[1]*

[1]Faculty of Pharmacy, Universitas Andalas, 25163, Padang, Sumatra Barat, Indonesia
*Corresponding author. Email: fatmasriwahyuni@phar.unand.ac.id

ABSTRACT

Cowanin, which is isolated from the stem bark of asam kandis (*Garcinia cowa* Roxb.) has been known to have cytotoxic activity in MCF-7/HER2 breast cancer cells. Recent studied have reported that cowanin compounds are able to inhibit MCF-7/HER2 cell migration and T47D cell cycle in the G0-G1 phase. This research aims to determine the effect of cowanin on the cyclin D1 protein expression in MCF-7/HER2 breast cancer cells. There are 2 groups of treatments, such as negative control (cell suspension) and cowanin with IC50 value of 10,51 µM as the concentration. The expression of cyclin D1 protein was detected using western blot method. Area and density of the protein are the parameters that will be observed by using ImageJ software and followed by a statistical test, named the independent T test. The research verify that cowanin compounds induced cell cycle arrest of MCF-7/HER2 breast cancer cells by reducing the expression of cyclin D1 protein, marked by a significant decrease in the area and density of cyclin D1 protein ($p<0,05$).

Keywords: *Cowanin compounds; Garcinia cowa Roxb; cyclin D1; cell cycle; western blot; MCF-7/HER2 breast cancer cells*

Supporting Agencies : This Research was funded by Research Fund for Lecturer Development and DIPA of the Faculty of Pharmacy for the 2023 Fiscal Year with contract Number: 01/UN16.10.D/PJ.01./2023.

Indexing : Pharmacology

OP-089

EFFECT OF RUBRASANTON COMPOUNDS ON INHIBITION OF MIGRATION OF MCF-7/HER2 BREAST CANCER CELLS BY THE SCRATCH WOUND HEALING METHOD

Fatma Sri Wahyuni[1]*, Fitri Rachmaini[1], Dachriyanus[1], Idfi Adlina[1]

[1]Faculty of Pharmacy, Universitas Andalas, Indonesia
*Corresponding author. Email: fatmasriwahyuni@phar.unand.ac.id

ABSTRACT

One of the main compounds contained in asam kandis plants (*Garcinia cowa* Roxb.), especially in the stem bark is rubraxanthone. Rubraxanthone has been proven have cytotoxic activity on some types of cancer cells. In MCF-7/HER2 breast cancer cells, rubraxanthone has a potent cytotoxicity with a value of IC50 = 12.88 µM. Therefore, this research aims to determine the effect of rubraxanthone compound in inhibiting the migration of MCF-7/HER2 breast cancer cells to prevent metastasis. The method used in this research is scratch wound healing. The parameter that was considered was the ability to inhibit cell migration, as shown by a comparison of the percentage of cell gap area closure in the test group with the control group. The test group consists of rubraxanthone compound 1xIC50 and 2xIC50. The results obtained after 24-hours and 48-hours incubation for the control group were 27.86% and 56.17%, for the 1xIC50 concentration group were 20.80% and 25.83%, and for the 2xIC50 concentration group were 12.92% and 18.50%. From the results of statistical analysis with two-way ANOVA, it was found that the dose and incubation time have a significant effect on the percentage of cell area closure with $p<0.05$ value. It can be concluded that rubraxanthone compound have an effect on inhibiting the migration of MCF-7HER2 breast cancer cells.

Keywords: *Rubraxanthone; MCF-7/HER2 breast cancer cells; cell migration; scratch wound healing; metastasis.*

Supporting Agencies : This Research was funded by Research Fund for Lecturer Development and DIPA of the Faculty of Pharmacy for the 2023 Fiscal Year with contract Number: 01/UN16.10.D/PJ.01./2023.

Indexing : Pharmacology

OP-090

ANALYSIS OF APOPTOTIC CELL DEATH ON MCF7/HER2 BREAST CANCER CELL AFTER INDUCTION OF RUBRAXANTHONE COMPOUND BY DOUBLE STAINING METHOD

Fatma Sri Wahyuni[1], Lailaturrahmi[1], Dachriyanus[1], Muhammad Atha Hafizh Sismaya[1]*

[1]Faculty of Pharmacy, Universitas Andalas, 25163, Padang, Sumatra Barat, Indonesia
*Corresponding author. Email: fatmasriwahyuni@phar.unand.ac.id

ABSTRACT

Rubraxanthone compounds isolated from the bark of asam kandis (*Garcinia cowa* Roxb.) are known to have anticancer activity against MCF-7/HER2 breast cancer cells with an IC50 of 12.88 µM tested with the Microtetrazolium assay (MTT) test. This study aims to determine the effect of rubraxanthone compounds on one of the characteristics of cancer cells that can avoid death by apoptosis. There are 2 groups of treatments, such as negative control and rubraxanthone with IC50 value of 12.88 µM as the concentration. This cancer cell death test uses double staining method with acridine orange and propidium iodide DNA dye. Parameters observed in this test are differences in fluorescence of living cells, apoptosis and necrosis. The total cell count for each coverslip is at least 200 cells expand the field of view. Data on the percentage of live cells, apoptosis, and necrosis were obtained respectively 60.19±1.28 %, 39.39±1.34%, and 0.42±0.09% after rubrasanton induction. The results of statistical analysis using the independent T test showed that each group had a significant effect ($p<0.05$) on the number of living cells, apoptosis, and necrosis. From these results, it can be concluded that rubraxanthone. can induce apoptosis inMCF-7/HER2 breast cancer cells

Keywords: *Rubraxanthone compounds; Garcinia cowa Roxb; Apoptosis; Double staining; MCF-7/HER2 breast cancer cells*

Supporting Agencies : This Research was funded by Research Fund for Lecturer Development and DIPA of the Faculty of Pharmacy for the 2023 Fiscal Year with contract Number: 01/UN16.10.D/PJ.01./2023.

Indexing : Pharmacology

OP-091

THE EFFECTIVENESS OF DIGITAL PAMPHLETS TO IMPROVE HERBAL KNOWLEDGE OF HERBAL DRINK CONSUMER

Nikmatul Ikhrom Eka Jayani[1]* Atika Hanna Nur Azizah[2], Wahyu Miftakhur Rohmawati[2], Anita Dahliana[3], Eko Setiawan[4], Finna Setiawan[1]

[1]Pharmaceutical Biology, Faculty of Pharmacy, Surabaya University, Kalirungkut, Surabaya, 60293, Indonesia
[2]Faculty of Pharmacy, Surabaya University, Kalirungkut, Surabaya, 60293, Indonesia
[3]Faculty of Medicine, Surabaya University, Kalirungkut, Surabaya, 60293, Indonesia
[4]Department of Clinical and Community Pharmacy, Faculty of Pharmacy, Surabaya University, Kalirungkut, Surabaya, 60293, Indonesia
*Corresponding author. Email: nikmatul.ikhrom@staff.ubaya.ac.id

ABSTRACT

Pamphlets are an effective and efficient educational media for increasing respondents' knowledge. This research aims to analyze the provision of digital pamphlets related to herbal information (ginger or *Aloe vera*) contained in the "I" brand Herbal Drink. This research method uses two-group pretest-posttest design with a research sample of 200 respondents. Inclusion criteria: people aged 20–56 years with a minimum bachelor's degree who have consumed the herbal drink brand "I" and are visitors to Café Jamu brand "I". Exclusion criteria: being unable to read Indonesian well and correctly; being a Pharmacy and Traditional Medicine graduate. Results showed that the level of customer knowledge regarding ginger herbs increased from a mean score of 6.01 ± 1.47 to 7.35 ± 1.05, and for *Aloe vera* herbs, the mean score increased from 6.35 ± 1.16 to 7.78 ± 0.48. Statistical testing of the total knowledge score using the Wilcoxon test showed a significance value (P = 0.00) for ginger or *Aloe vera* herbs. This research concludes that providing digital pamphlets can increase knowledge of herbal information (ginger or *Aloe vera*) in the "I" brand Herbal Drink.

Keywords: *digital pamphlet, knowledge, herbal product, information*

Supporting Agencies : PT. Jamu Iboe Jaya, Faculty of Pharmacy and LPPM (Research and Community Service Unit), University of Surabaya.

Indexing : Social Pharmacy

OP-092

KASTURI ORANGE PEEL (CITRUS MICROCARPA BUNGE) ESSENTIAL OIL: CHEMICAL PROFILE, FORMULATION AS ROLL ON AROMATHERAPY AND ITS EVALUATION

Yahdian Rasyadi[1]*, Wida Ningsih[1], Wanda Pranca Mulya[1], Dini Hanifa[2]

[1]Pharmaceutical Technology Department In The Clinical Pharmacy Study Program, Faculty of Health Sciences, Universitas Baiturrahmah, Padang, Indonesia
[2]Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia
*Corresponding author. Email: yahdianrasyadi@gmail.com

ABSTRACT

Kasturi orange (*Citrus microcarpa* Bunge) is widely cultivated and consumed in Indonesia. The flesh of the fruit is a good source of vitamin C. Essential oil of kasturi orange peel is one of the ingredients used as a raw material for aromatherapy roll-on preparations. Roll-on aromatherapy is currently widely used by various age groups. This research aims to determine the content of kasturi oil, its formulation as a roll-on aromatherapy preparation and its physical evaluation. The essential oil of kasturi orange peel was extracted using the distillation method, and then the physicochemical properties were examined. The chemical content of the oil was analyzed using GC-MS. The roll-on aromatherapy preparation formulas were made by varying concentrations of kasturi oil, F0 (0%), F1 (4%), F2 (6%), and F3 (10%). Additional substances used were menthol, camphor, patchouli oil, and VCO. Patchouli oil was used in this preparation to make the aroma last longer. Evaluation of roll-on aromatherapy preparations includes organoleptic tests, pH tests, specific gravity, viscosity, clarity, and stability. From the extraction results, the percentage yield of essential kasturi oil was 0.55% v/w, with a density of 0.850 g/mL and a refractive index of 1.469. From the chromatogram results, there were 18 compounds in kasturi oil, with the largest components were D-limonene (32.59%), formula F3 had the best aroma resistance, approximately for 5 hours, with a slightly strong aroma. Physical evaluation results of all roll-on aromatherapy formulas had met the requirements.

Keywords: *Roll on, aromatherapy, kasturi oil, Citrus microcarpa Bunge, kasturi orange peel.*

OP-093

CYTOTOXIC STUDY OF RUBRAXANTHONE ON MCF-7/HER2 BREAST CANCER CELLS USING THE MICROTETRAZOLIUM ASSAY (MTT)

Fatma Sri Wahyuni[1]*, Elsa Badriyya[1], Dachriyanus[1], Adzra Yumna Raihan[1]

[1]Faculty of Pharmacy, Universitas Andalas, 25163, Padang, Sumatera Barat, Indonesia
*Corresponding author. Email: fatmasriwahyuni@phar.unand.ac.id

ABSTRACT

Rubraxanthone compound isolated from the stem bark of asam kandis *Garcinia cowa* Roxb. The rubraxanthone compound is known to have cytotoxic activity that can inhibit the growth and development of several cancer cells including H-460 lung cancer cells, MCF-7 breast cancer cells, and DU-145 prostate cancer cells. This study aims to analyze whether the rubraxanthone compound has a cytotoxic effect on MCF-7/HER2 breast cancer cells. In testing the potential for cytotoxic activity of rubraxanthone compounds tested using the microtetrazolium assay method (MTT). The principle of testing using the microtetrazolium assay method (MTT), which can be observed for a change in color, in the form of a purple precipitate of formazan crystals after being added to the tetrazolium salt reagent. Testing using the microtetrazolium assay method (MTT) this will get the percentage value of cell viability which is used to calculate the IC50 value of the test compound using software Graphpad Prism 9. This test used a solution of the rubraxanthone compound with various concentrations are 0,1 µM, 1 µM, 10 µM, 100 µM, and used a negative control which contained cell suspension in the medium. The results showed that the IC50 value of the rubraxanthone compound against MCF-7/HER2 breast cancer cells was 12,88 µM. From the results obtained, it can be concluded that the rubraxanthone compound has good cytotoxic activity against MCF-7/HER2 breast cancer cells because it is in the IC50 value range of 10-30 µM.

Keywords: *rubraxanthone compounds; cytotoxic activity; microtetrazolium assay; MCF-7/HER2 breast cancer cells*

Supporting Agencies : This Research was funded by Research Fund for Lecturer Development and DIPA of the Faculty of Pharmacy for the 2023 Fiscal Year with contract Number: 01/UN16.10.D/PJ.01./2023

Indexing : Pharmacology

OP-094

DEVELOPMENT AND CHARACTERIZATION OF SURFACE SOLID DISPERSION MORINGA OLEIFERA LEAF EXTRACT MICROCRYSTALLINE CELLULOSE BY CO-GRINDING METHOD

Karina Citra Rani[1]*, Paramitha Prameswari[2],Cheryl Matulatan[2], Alda Prillandrea Hariadi Putri[2], Finna Setiawan[3], Nikmatul Ikhrom Eka Jayani[3]

[1]Departement of Pharmaceutics, Faculty of Pharmacy, University of Surabaya, Surabaya,60294, Indonesia
[2]Faculty of Pharmacy, University of Surabaya, Surabaya,60294, Indonesia
[3]Department of Pharmaceutical Biology, Faculty of Pharmacy, University of Surabaya, Surabaya 60294, Indonesia
*Corresponding author. Email: karinacitrarani@staff.ubaya.ac.id

ABSTRACT

The extract of *Moringa oleifera* leaves contain flavonoid compounds which are potential antioxidant source. The development of *Moringa oleifera* leaf extract into an herbal product is still limited because of the difficulty in handling the consistency, hygroscopicity, and low solubility of the extract. Surface solid dispersion (SSD) is a versatile method to improve not only the physical characteristics but also the solubility of the extract. This study aimed to improve the characteristics of *Moringa oleifera* leaf extract through SSD using microcrystalline cellulose as a carrier. The preparation of the SSD was conducted by co-grinding method at two ratios of extract and carrier (1:2 and 1:4). The results of this study revealed that SSD was able to entrap the extract in the surface area of microcrystalline cellulose. Hence, the SSD powder performed better moisture content and flowability. The characterization of thermal characteristics and crystallinity also performed the reduction of crystal lattice regularity compared to the pure extract. It was observed from the reduction of enthalpy and distinctive peak intensity. The total flavonoid content of SSD 1:2 was 14.70±0.35 mg QE/g, whereas SSD 1:4 was 7.00±0.07 mg QE/g. The solubility of the flavonoid compound from SSD 1:2 was 62.26±0.62 ppm, while the solubility of SSD 1:4 was 63.58±0.62 ppm. The solubility of the flavonoid compound from SSD preparation increased about 1.16-fold compared to the physical mixture. The SSD powder with 1:2 and 1:4 ratios showed IC50 values of 539.38 ppm and 524.44 ppm respectively. The preparation of SSD of *Moringa oleifera* leaf extract can improve the physical and chemical characteristics of the extract before formulation.

Keywords: *Moringa oleifera leaf extract, microcrystalline cellulose, surface solid dispersion, co-grinding*

Supporting Agencies: Source of research funding by LPPM University of Surabaya with number of contract 9/II-2022/ST-TA/FF/III/2023

Indexing: Pharmaceutical Technology

OP-095

ANALYSIS OF TURMERIC (CURCUMA LONGA LINN) ESSENTIAL OIL FROM DIFFERENT GROWING LOCATIONS USING FTIR/GC-MS SPECTROSCOPY COUPLED TO CHEMOMETRICS AND ITS WOUND HEALING ACTIVITIES

Suryati Syafri[1], Riskana Soraya Putri[1], Irwandi Jaswir[2], Faridah Yusof[3], Yohannes Alen[1], Syofyan Syofyan[1], Dachriyanus Hamidi[1]*

[1]Faculty of Pharmacy. Universitas Andalas. Padang. West Sumatera. Indonesia
[2]International Institute of Halal Research and Training. International Islamic University Malaysia
[3]Departement of Biotechnology Engineering. Kulliyah of Engineering International Islamic University Malaysia
*Corresponding author. Email:dachriyanus@phar.unand.ac.id

ABSTRACT

Turmeric essential oil (TEO) is used as an anti-inflammatory, hepatoprotective, antitumor, antiviral, wound healing, and anticancer. However, their chemical content influences the biological activity of essential oils. Therefore, this study aims to determine the wound-healing activity of turmeric essential oil collected from seven growing locations in West Sumatra, classify it based on fingerprint patterns of IR spectra combined with chemometrics, and identify their metabolite profiling using GC-MS spectroscopy. Fresh turmeric rhizome was extracted by the hydrodistillation method. TEO classification was carried out by PCA (Principal Component Analysis), and PLS-DA (Partial Least Squares-Discriminant Analysis) was used for predicting characteristic functional groups and metabolites (VIP > 1) in TEO. Wound healing activity was performed using in-vitro fibroblast cell proliferation and migration assay. Data analysis was performed using one-way ANOVA with a 95% confidence level. PCA analysis based FTIR spectra was able to determine highland and lowland-originated TEO. The metabolites responsible for TEO classification were α-Phellandrene and D-limonene. The result showed that TEO originating from both lowlands and highlands enhanced fibroblast cell proliferation and fibroblast cell migration. The combination of IR spectral fingerprint patterns and chemometric analysis could classify TEO based on the height location of growth. The results showed that the altitude of the growing location had no significant effect on the wound-healing activity of TEO from West Sumatra ($p>0.05$).

Keywords: *Turmeric; essential oil; FTIR; GC-MS; Chemometrics; wound healing.*

Supporting Agencies : Faculty of Pharmacy Andalas University (Indonesia) through Fundamental Research Grant No.02/UN16.10.D/PJ.01./2023

Indexing : Pharmaceutical Chemistry

OP-096

ANALYSIS OF THE COST EFFECTIVENESS OF MONOTHERAPY AND COMBINATION ANTIDIABETIC TREATMENT IN COVID-19 INPATIENTS SUFFERING FROM TYPE 2 DIABETES MELLITUS AT PANEMBAHAN SENOPATI HOSPITAL, BANTUL, YOGYAKARTA

ST. Muallifah[1], Fitri Andriani Fatimah[1]*, Anis Febri Nilansari[2], Listiana Hidayati[1]

[1]Department of Pharmacy, Faculty of Industry Halal, Nahdlatul Ulama University of Yogyakarta, Indonesia
[2]Department of Pharmacy, Faculty of Science and Technology, PGRI University of Yogyakarta, Indonesia
*Corresponding author. Email: fitri.andriani.f@unu-jogja.ac.id

ABSTRACT

One of the acute respiratory tract infections is COVID-19 which is caused by the SARS-CoV-2 type Corona virus. Cases of COVID-19 infection in Indonesia are fluctuating and are at WHO level 1 standards. However, the elderly and patients with comorbidities still have the highest risk of COVID-19 infection. The level of severity and cause of death of COVID-19 patients is influenced by comorbid diseases, namely diabetes mellitus, hypertension, age, and obesity. Type 2 diabetes mellitus is associated with an increased risk of severity and death in COVID-19 patients, so it will have an impact on health financing, especially pharmaceutical costs. Therefore, this research aims to determine the cost-effectiveness of antidiabetic treatment in inpatients with type 2 diabetes mellitus at Panembahan Senopati Hospital. This research is a non-experimental descriptive-analytical method with retrospective data collection based on medical records, laboratory results, and drug prices in hospital administration in 2020 - 2021. The measurements carried out are cost-effectiveness analysis by comparing the average direct medical costs with the percentage of patients with FDS values and ACER and ICER calculations. The research results showed that 23 data on COVID-19 patients with type 2 diabetes mellitus were cost-effective based on the ACER value for a single therapy, namely glimepirid, amounting to IDR. 60,095, 2 combination therapy, namely novorapid+glimepiride, Rp. 94,728 and 3 combination therapy, namely metformin+novorapid+glibenclamide, amounting to IDR 129,280. Meanwhile, the ICER value shows that the cost-effective antidiabetic therapy for single therapy is Novomix, amounting to IDR. 461,221, 2 combination therapy is Metformin and Novomix amounting to Rp. 451,547.

Keywords: *Cost-effectiveness analysis, type 2 diabetes mellitus, inpatient, COVID-19.*

Indexing: Pharmacoeconomics, health financing.

OP-097

ANALYSIS OF APOPTOTIC CELL DEATH ON MCF-7/HER2 BREAST CANCER CELL AFTER BEING TREATED BY COWANIN COMPOUND USING DOUBLE STAINING METHOD

Sherly Handayani[1], Dachriyanus[1], Fatma Sri Wahyuni[1], Fitri Rachmaini[1]*

[1]Faculty of Pharmacy, Universitas Andalas, 25163, Padang, Sumatra Barat, Indonesia
*Corresponding author. Email: fatmasriwahyuni@phar.unand.ac.id

ABSTRACT

One of the characteristics of cancer cells is that they can avoid the apoptotic response, so compounds are needed to increase the apoptosis response to cancer cells. Compounds are proven to have cytotoxic effects, such as cowanin that compounds isolated from the bark of *Garcinia cowa* Roxb. Based on preliminary studies, it has been found that, cowanin has cytotoxic activity against MCF-7/HER2 breast cancer cells with an IC value of 50 10.51 µM using the Microtetrazolium assay (MTT) test. In this study using a negative control group and cowanin to determine the type of MCF-7 / HER2 cell death by double staining method. Based on differences in DNA fluorescence of living and dead cells due to the double dye of acridine orange and propidium iodide, results were obtained for viable cells with green fluorescence, cells undergoing apoptosis fluorescent yellow-orange, and necrosis cells fluorescent red. In the results of this study, it was found that the percentage of viable cells in the negative control group was 99.32 + 0.22%, apoptosis was 0.29 + 0.15%, and necrosis was 0.39 + 0.08%, while in the cowanin group viable cells were 47.40 + 1.63%, apoptosis was 51.95 + 1.63%, and necrosis cells were 0.65 + 0,09%. The percentage of cells was analyzed using an independent T test, obtained a $p<0.05$ values in viable, apoptosis, and necrosis cells which means that there is a significant difference between the negative control group and cowanin. It can be concluded that cowanin compounds can induce death of MCF-7/HER2 breast cancer cells by apoptosis.

Keywords: *Cowanin; breast cancer cells MCF-7/HER2; apoptotic; double staining*

Supporting Agencies : This Research was funded by Research Fund for Lecturer Development and DIPA of the Faculty of Pharmacy for the 2023 Fiscal Year with contract Number: 01/UN16.10.D/PJ.01./2023.

Indexing : Pharmacology

OP-098

SUBACUTE TOXICITY STUDY OF MORINGA LEAVES EXTRACT (MORINGA OLEIFERA LAM.) ON CREATININE CLEARANCE AND AST LEVELS OF MALE WHITE RAT

Yufri Aldi[1]* , Rahmad Abdillah[1], Nola Florida[1]

[1]Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatra, Indonesia
*Corresponding author. Email: yufrialdi@phar.unand.ac.id

ABSTRACT

Moringa oleifera leaves has several pharmacological activies, one of them as immunostimulant. This study aims to determine subacute toxicity of the ethanol extract of *Moringa oleifera* Lam. on the kidneys and livers. Thirty-six male white rats divided into 4 groups. The control group was given 1% Na CMC and the 3 test groups were given the ethanol extract of *Moringa oleifera* at a dose of 7, 21, 140 mg/kgbw orally for 21 days and observed the toxic symptoms that arise and the number of dead animals. Parameters observed were 24- hour urine volume, serum creatinine, urine creatinine, creatinine clearance, percentage of kidney function, and AST levels of animals measured on day 8, 15, and 22. All data on each parameter were analyzed using two-way ANOVA and continued with Duncan's test. The results showed that the dose variation (7, 21, and 140 mg/kgbw) of the ethanol extract of *Moringa oleifera* and the duration of administration (7, 14, and 21 days) had a significant effect ($P<0.05$) on creatinine clearance and AST levels. Administration of extract *Moringa oleifera* did not cause death in animals and no toxic symptoms were seen. It can be concluded that the kidneys function and AST levels increased more than the normal range (kidneys function>100%) and (AST> 100µ/L) which indicated that there was a potential damage to kidneys function and livers function.

Keywords: *Moringa oleifera Lam. ; ethanol extract of Moringa ; toxicity ; kidneys and livers function; creatinine; aspartate aminotransferase*

OP-099

SUBACUTE TOXICITY STUDY OF ETHANOL EXTRACT OF NONI FRUIT (MORINDA CITRIFOLIA L.) ON CREATININE CLEARANCE LEVELS IN MALE WHITE RATS

Elidahanum Husni[1]*, Yufri Aldi[1], Fathiyyah Nurul Ashilah[1]

[1]Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatra, Indonesia
*Corresponding author. Email: elidahanumhusni@gmail.com

ABSTRACT

Noni fruit (*Morinda citrifolia* L.) is generally used as a traditional medicine due to its pharmacological activities, including its role as an immunomodulator. However, the continuous use of noni fruit as an immune booster may affect the organs, making safety testing an important factor in its use as a traditional medicine. This study aims to determine the subacute toxicity of the ethanol extract of noni fruit to the kidneys by observing the parameter of creatinine clearance in male white rats. The examination of creatinine clearance was carried out using 36 rats, which were divided into 4 groups, with one group being a control given 0.5% Na CMC and three test groups being given ethanol extract of noni fruit at doses of 500, 1000, and 3000 mg/kgbw orally for 7, 14, and 21 days. Parameters such as 24-hour urine volume, urine creatinine, serum creatinine, creatinine clearance, and percentage of kidney function were observed on days 8, 15, and 22. All data for each parameter were analyzed using two-way ANOVA and continued with Duncan's test, with significance taken at the confidence level of $p<0.05$. The results showed that variations in dose and duration of administration of ethanol extract of noni affected the decrease in creatinine clearance ($p<0.05$). It can be concluded that doses of 500, 1000, and 3000 mg/kgbw of ethanol extract of noni during 7, 14, and 21 days of administration had a significant effect on decreasing levels of creatinine clearance. However, a decrease in creatinine clearance levels below the normal range was seen in the 3000 mg/kg body weight dose group for 21 days, indicating the potential for impaired kidney function.

Keywords: *Morinda citrifolia L., ethanol extract of noni fruit, subacute toxicity, kidney function, creatinine.*

OP-100

SUBACUT TOXICITY TEST OF ETHANOL EXTRACT OF NONI FRUIT (MORINDA CITRIFOLIA L.) ON KIDNEY HISTOLOGY OF MALE WHITE RATS

Yufri Aldi[1]*, Dita Permatasari[1], Annisa Zainuddin[1]

[1]Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatra, Indonesia
*Corresponding author. Email: yufrialdi@phar.unand.ac.id

ABSTRACT

Noni fruit (*Morinda citrifolia* L.) has been widely used as medicine by the community and is also used to increase endurance. Its use is quite wide as an immunostimulant, but the safety of its studies has not been widely known, so a subacute toxicity test of noni fruit ethanol extract was carried out on renal histology on repeated use. A total of 36 male white rats aged 2-3 months were divided into 4 treatment groups, one group as a control was given 0.5% Na CMC and the other three groups were given ethanol extract of noni fruit at doses of 500, 1000 and 3000 mg/Kg BW for 7, 14, and 21 days. On day 8, 15 and 22, the test animals were sacrificed and their kidney organs were collected. The parameters analyzed were the effect of variations in dose and duration of administration on renal histology which were presented descriptively and the ratio of kidney organs using two-way ANOVA. The results showed that the highest damage score was in the treatment group with a dose of 3000 mg/KgBB with an average score of 2.6 in the minimal-moderate damage category and the highest damage occurred at 21 days of administration. The results of the ratio of kidney organs showed a decrease which was influenced by the dose ($p<0.05$) and duration of administration ($p<0.05$). The results of Duncan's follow-up test showed that there was a significant difference between the 3000 mg/KgBW dose and the 500 and 1000 mg/KgBW dose group and there was a significant difference from each group of the testedNadministration duration.

Keywords: *Noni fruit, subacut toxicity, histology, kidney*

OP-101

THE EFFECTS OF NONI (MORINDA CITRIFOLIA L.) ETHANOL EXTRACT ON SGPT AND SGOT ENZYME LEVELS OF MALE WHITE RAT

Elidahanum Husni[1]*, Yufri Aldi[1], Alicia Va Yanson[1]

[1]Faculty of Pharmacy, Universitas Andalas, 25163, Padang, Sumatra Barat, Indonesia
*Corresponding author. Email: elidahanumhusni@gmail.com

ABSTRACT

Noni fruit (*Morinda citrifolia* L.) has been used for a long time as a medicinal plant because it is known to have many benefits, including as an immunomodulator. Repeated use of noni fruit will influence the body, making safety testing needs to be done. This study aims to determine the effects of ethanol extract of noni fruit on liver function by observing the parameters of SGPT and SGOT levels in male white rats. A total of 36 male white rats were divided into 4 groups, 1 control group and 3 treatment groups being given ethanol extract of noni fruit at doses of 500, 1000, and 3000 mg/kgBW orally for 7, 14 and 21 days. Observations were done on day 8th, 15th, and 22nd using blood serum that was tested with a 5010 v5+ photometer. Data were analyzed by using two-way ANOVA and followed by Duncan's test, with significance taken at the level of confidence ($p<0,05$). The results showed that the levels of SGPT and SGOT were significantly affected by the dose and duration of administration of noni fruit ethanol extract ($p<0,05$). It can be concluded that there was a significant effect on the administration of noni fruit ethanol extract at doses of 500, 1000, and 3000 mg/kgbw during 7, 14, and 21 days of administration on SGPT and SGOT levels in male white rats. Increased levels of SGPT and SGOT above the normal range which is indicated by the potential for damage liver function occurs at a dose of 3000 mg/kgBW for 21 days.

Keywords: *Morinda citrifolia L., ethanol extract of noni fruit, SGPT, SGOT*

OP-102

PROFILE OF HAND SANITIZERS SOLD ONLINE AS AN EFFORT TO PREVENT COVID-19 INFECTION THROUGH ASSESSMENT OF ALCOHOL CONTENT

Hansen Nasif[1]*, Lailaturrahmi[1], Hariani Ayunda[1], Oktaviani Firza[1]

[1]Faculty Of Pharmacy Andalas University Padang Indonesia, Kampus Unand Limau Manis Padang 25163
*Corresponding author. Email: hansennasif@phar.unand.ac.id

ABSTRACT

The COVID-19 pandemic has been a global public health problem that is causing an increase in hand sanitizer usage to prevent disease transmission. The increasing demand for hand sanitizers leads to increased production of hand sanitizers. This study was conducted to get the profile of hand sanitizers sold online to prevent COVID-19 infection through assessment of alcohol content. The Alcohol content was analyzed using the gas chromatography method with a flame ionization detector. Six samples of hand sanitizers were purchased from six different online marketplaces in Indonesia. Three samples were gel hand sanitizers, while the others were liquid hand sanitizers packed in spray bottles. Three of the six samples contained methanol; the highest concentration was 76.54%. It can be concluded that those three hand sanitizer samples did not meet WHO hand sanitizer requirements and might pose a severe risk of toxicity.

Keywords: *Covid-19, Hand Sanitizer, Methanol, online marketplaces*

Supporting Agencies: Source of research funding by Andalas University with a number of contract T/34/UN.16.17/PT.01.03/KO-RD/2020

Indexing: Clinical Pharmacy

OP-103

ANTIBACTERIAL ACTIVITY TEST OF ETHANOL EXTRACT OF LIME PEEL (CITRUS AURANTIFOLIA) AGAINST STAPHYLOCOCCUS AUREUS, PSEUDOMONAS AERUGINOSA AND PROPIONIBACTERIUM ACNES

Aldesra Fitri[1]*

[1]Department of Pharmacy, Faculty of Science and Technology, Institut Teknologi Sain dan Kesehatan RS dr Soepraoen Kesdam V/BRW Malang
*Email: aldesra@itsk-soepraoen.ac.id

ABSTRACT

Lime peel is a byproduct of the agricultural industry that contains essential oils, flavonoids, tannins, saponins, phenols and alkaloids. One of these compounds has the potential to inhibit bacterial activity. This study investigated the effectiveness of lime peel ethanol extract on the growth of three types of bacteria: *Staphylococcus aureus*, *Pseudomonas aerugi*nosa and *Propionibacterium acnes*. This laboratory experiment aimed to determine the Minimum Inhibitory Concentration (MIC) using the well diffusion method. The results showed that lime peel extract was effective in inhibiting the growth of *P. acnes*, *P. aeruginosa* and *S. aureus* bacteria, with the MICs being 10%, 15% and 20%, respectively. The average zone of inhibition was measured at 9.8 mm, 9.6 mm and 12.6 mm. The significance of the results was confirmed using the Two-Way Anova test at a significance level of $p < 0.05$. From these findings, it can be concluded that lime peel extract has the potential to inhibit the growth of these three types of bacteria.

Keywords: *Antibacterial; Ethanol extract; Lime peel; Minimum Inhibitory Concentration (MIC)*

OP-104

EVALUATION OF DRUG MANAGEMENT AND REPAIR STRATEGY WITH HANLON METHOD IN THE INSTALLATION OF PHARMACY HOSPITAL LEVEL IV MADIUN YEAR 2019, THESIS, FACULTY OF PHARMACY SETIA BUDI UNIVERSITY, SURAKARTA

R.F.X Premihadi Putra[1,2], * Titik Sunarni[1], Ismi Rahmawati[1]

[1]Faculty of Pharmacy, Setia Budi University, Surakarta 57127, Indonesia
[2]School of Health Sciences Bhakti Husada Mulia Madiun, East Java 63139, Indonesia
*Corresponding author. Email: premihadiputra@gmail.com

ABSTRACT

Drug management is a cycle of drug management which includes selection, procurement, distribution and use. The purpose of this research is to evaluate the management of the drug in IFRS Tk. IV Madiun by using efficiency indicators and a repair strategy with Hanlon method. Research uses descriptive design for retrospective and concurent data. Data collected is quantitative and qualitative. All stages of drug management in IFRS Tk. IV Madiun measured the level of efficiency using the indicators of DepKes (2008), Permenkes (2014) and WHO (1993), then compared to standards and described based on the analysis of the priority action plan with Hanlon method. The results showed that the appropriate management system standards are: the availability of the drug (16.04 months), the percentage of the prescription with generic drugs (90.18%), the average time used to serve the prescription up to the patient's hands (non blend 6 minutes, a 14-minute mix), the percentage of drugs that are properly labeled (100%), the drug value is expired or damaged. The stages of management of drugs that have not been in accordance with the standards are: the suitability of drug items available with FORNAS (47.48%), the percentage of capital/funds available with the total required funds (84.04%), the percentage of allocation of drug procurement funds (41.37%), the percentage of appropriateness procurement with the reality of use for each drug item (120.57%), the frequency of procurement of each drug item (3 times), the match between the drug with the stock card (92.59%), the ITOR (3.96 times), the percentage of drug value expired and damaged (0%), the percentage of dead stock (0.01%), the drug average per prescription.

Keywords: *drug management, efficiency indicators, pharmaceutical installation RS Tk. IV Madiun, Hanlon method*

Indexing : Management Pharmacy

OP-105

A STUDY OF THE POTENTIAL DRUG-DRUG INTERACTIONS OF ANTIDIABETIC DRUGS BASED ON LITERATURE IN GERIATRIC PATIENTS WITH TYPE 2 DIABETES MELLITUS AT RSUP DR. M. DJAMIL PADANG

Rahmi Yosmar[1], Eugenia Shepany[1], Najmiatul Fitria[1]*

[1]Department of Pharmacy, Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia
*Corresponding Author. Email: najmiatulfitria@phar.unand.ac.id

ABSTRACT

Type 2 diabetes mellitus (DM) is a disease that is the leading cause of blindness, heart disease, and kidney failure. Geriatric patients with type 2 DM and complications require multiple medications (polypharmacy), which is a contributing factor to drug-drug interactions (DDIs). DDIs can affect the clinical outcome of patients. This study aims to analyze potential drug-drug interactions based on the mechanism and severity, to determine the relationship between the number of medications and potential drug interaction, and next, to determine the relationship between polypharmacy and the severity with clinical outcomes. This was an analytical observational with retrospective data collection through patient medical records of hospitalized patients treated with an antidiabetic and one or more other drugs that met the inclusion criteria, involving 81 patients using total sampling. The result showed that out of 81 patients, there were 59 patients who potentially experienced drug-drug interactions (72.8%) with a total of 162 cases of drug interactions and the most prevalent interaction mechanism was pharmacodynamic (84.0%) with a moderate severity level (57.4%). The study showed a significant relationship between the number of medications and potential drug-drug interactions ($p<0.05$). In contrast, the relationship between polypharmacy and the severity with clinical outcomes did not have a significant relationship ($p>0.05$). An increase in the number of drugs is a predictor of drug interactions. Although drug interactions may theoretically occur, not all interactions will show significant effects in patients.

Keywords: *Potential Drug Interactions, Type 2 DM, Geriatrics, Antidiabetic*

OP-106

KNOWLEDGE AND ATTITUDE OF HYPERTENSION PATIENTS TOWARDS TRADITIONAL MEDICINES: A CROSS-SECTIONAL STUDY AT PUBLIC HEALTH CENTER, SIAK, RIAU

Husnawati[1]*, Ratna Sari Dewi[1], Yozi Fiedya Ningsih[1], Dewi Fitriani[1]

[1]Sekolah Tinggi Ilmu Farmasi Riau, Jalan Kamboja Simpang Baru, Pekanbaru, Riau, Indonesia
*Corresponding author. Email: hoe5nawati@gmail.com

ABSTRACT

Hypertension is a significant global concern associated with severe cardiovascular ailments, including stroke, myocardial infarction, cardiac insufficiency, and renal dysfunction. Traditional medicines (TM) represent a potential alternative treatment modality for the management of hypertension. Hence, this study aims to establish the relationship between individuals' knowledge and attitudes about using TM among hypertension patients. This observational research utilizes a descriptive-analytic approach with a cross-sectional design. Validated questionnaires were used to collect the knowledge and attitudes data of respondents. The correlation between knowledge and attitudes was analyzed with the Spearman test using SPSS version 24. A total of 102 respondents were successfully acquired using purposive non-probability sampling. The results of this study indicate a significant statistical relationship between the knowledge and attitudes of hypertensive patients regarding the utilization of traditional medicine (p-value 0.000). Furthermore, a moderate positive correlation (rs 0.493) was observed, suggesting that an improvement in knowledge is associated with a corresponding enhancement in the attitude of hypertensive patients towards traditional medicine.

Keywords: *knowledge; attitude; hypertension; traditional medicine*

Indexing : Clinical Pharmacy

OP-107

COMBINED EFFECT OF TOPICAL APPLICATION OF VIRGIN COCONUT OIL (VCO) AND BLACK CUMIN OIL (NIGELLA SATIVA) ON THE UPREGULATION OF VEGF GENE EXPRESSION AND WOUND HEALING IN DIABETIC ULCERATED RATS

Eliza Arman[1], Almahdy A[1], Putri Dafriani[2], Dedy Almasdy[1]*

[1]Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia
[2]Department of Biomedical Science, Stikes Syedza Saintika, Padang, Indonesia
*Corresponding author email: dedyalmasdy@phar.unand.ac.id

ABSTRACT

Introduction: Traditional therapies are increasingly explored as alternative methods for the management of diabetic ulcer. In particular, VCO and black cumin oil (*Nigella sativa*) have attracted attention for there potential therapeutic benefits in promoting skin wound healing. This interest stems from its documented anti-inflammatory properties, ability to stimulate tissue growth, and antioxidative qualities. Therefore, this study aims to evaluate combined effect of Virgin Coconut Oil (VCO) and black cumin oil (*nigella sativa*) on expression of Vascular Endothelial Growth Factor (VEGF) during wound healing process in diabetic ulcer rat models. Methods: The rats were induced with diabetes mellitus through the intraperitoneal injection of streptozotocin, and wound was created using a 10-mm diameter punch biopsy. An experimental methodology was used, comprising the division of 30 rats into six groups, namely control, VCO, black cumin oil, and combinations of VCO and black cumin oil (*nigella sativa*) labeled as C1, C2, and C3. The formulated treatments were topically applied to wound for 7 and 14 days. Furthermore, fasting blood glucose (FBG) levels were monitored weekly for assessment. At the end of the treatment, the samples were sacrificed and wound was excised, followed by molecular biological analysis and histopathological examination. Results: After the inducement of Diabetes mellitus, the samples were given topical treatment for 7 and 14 days. On day 7, VEGF gene expression showed the highest increase in the C3 group (70% black cumin oil: 30% VCO), with an average of 1.85. Meanwhile, the highest increase on day 14 was observed in the C3 group (70% black cumin oil: 30% VCO), with an average of 1.69. Conclusion: The combination of VCO and Black Cumin Oil (*nigella sativa*) could be used as an agent to accelerate wound healing in diabetic conditions, as indicated by the increased expression of VEGF gene.

Keywords: *black cumin oil, diabetic ulcer, VCO, VEGF, wound*

OP-108

ANTI-ARTHRITIS ACTIVITY OF ZINGIBER OFFICINALE ROSCOE AND IMPERATA CYLINDRICA RHIZOME EXTRACT COMBINATION

Rina Herowati[1]*, Gunawan Pamudji Widodo[1], Maria Ekarista Klau[2], and Iqbal Wahid Abdullah[1]

[1]Faculty of Pharmacy, Setia Budi University, Surakarta 57127, Indonesia
[2]St. Elisabeth Kefamenanu, Timor Tengah Utara 6560 Indonesia
*Corresponding author. Email: rinaherowati@setiabudi.ac.id

ABSTRACT

Zingiber officinale Roscoe and *Imperata cylindrica* have been traditionally used as anti-arthritic agents. This study aims to determine the anti-arthritic effect of a combination of *Z. officinale* and *I. cylindrica* rhizome extracts in Complete Freund's Adjuvant-induced arthritis rats and postulate the mechanism underlying the anti-arthritic activity. Arthritis was induced in male Wistar rats using Complete Freund's Adjuvant. *Z. officinale* and *I. cylindrica* rhizome extracts in single administration as well as a combination were orally administered for six days. The anti-arthritic activity was determined by the volume of rat paw edema and the histology of the joints. A network pharmacology study was conducted to postulate the molecular mechanism of action of the anti-arthritic activity of both plants. A single administration of *Z. officinale* and *I. cylindrica* rhizome extract, as well as the combination of both extracts showed anti-arthritis activity. Histopathology profiles revealed that both extracts enhanced the joint space of the rat's ankle in a single administration or combination. Single oral administration of *I. cylindrica* rhizome extracts had higher anti-arthritic activity than that of *Z. officinale* and the combination. The main target protein of the compounds contained in both extracts is Prostaglandin G/H synthase 2.

Keywords: *anti-arthritic, Imperata cylindrica, network pharmacology, Zingiber officinale Roscoe*

Supporting Agencies : Source of research funding by Ministry of Education, Culture, Research, and Technology of Indonesia with number of contract 018/LL6/PB/AL.04/2023

Indexing : Pharmacology

OP-109

A STUDY OF POTENTIAL DRUG-DRUG INTERACTIONS OF CARDIOVASCULAR DRUGS BASED ON LITERATURE IN GERIATRIC PATIENTS WITH CONGESTIVE HEART FAILURE AT DR. M. DJAMIL PADANG HOSPITAL

Dita Permatasari[1], Nur Alima Husna[1], Rahmi Yosmar[1]*

[1]Department of Pharmacy, Faculty of Pharmacy, Universitas Andalas, Padang, Indonesia 25175
*Corresponding author. Email: rahmiyosmar@phar.unand.ac.id

ABSTRACT

Congestive Heart Failure (CHF) is a notable cardiovascular disease impacting global morbidity and mortality. Geriatric patients with CHF typically require multiple medications that can potentially cause drug-drug interactions and affect patient therapy outcomes. This study aims to determine the potential drug-drug interactions, the relationship between the average number of cardiovascular drugs per day and the potential drug-drug interactions, and the relationship between the severity of drug-drug interactions and the clinical symptoms and signs of the patients. The research method used was analytical observational with retrospective data collection through the medical records of inpatients in 2021. A total of 63 patients were included using the total sampling method. Results revealed that furosemide was the most commonly prescribed cardiovascular medication (15.27%). Among the participants, 93.65% exhibited potential drug-drug interactions (332 occurrences), with the most frequent involving furosemide and bisoprolol (32 cases). Pharmacodynamic interactions were the dominant mechanism (85.24%), with moderate severity (65.06%) being common. A significant relationship existed between the average number of cardiovascular drugs per day and the potential drug-drug interactions ($p<0.05$). However, no significant relationship was found between interaction severity and clinical symptoms ($p>0.05$).

Keywords: *Potential Drug-Drug Interactions, CHF, Geriatric, Cardiovascular Drugs*

Supporting Agencies : The funding for this study is provided by the Research Grant from the Faculty of Pharmacy, Universitas Andalas, under contract number 16/UN16.10.D/PJ.01./2023.

Indexing : Clinical Pharmacy

OP-110

RATIONALIZING ORAL ANALGESIC ADMINISTRATION: AN INVESTIGATION IN PRIMARY HEALTHCARE

Yoneta Srangenge[1]*, Rian Gustang[2], Sri Oktavia[2]

[1]Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatra, Indonesia
[2]School of Pharmaceutical Science STIFARM Padang, West Sumatera, Indonesia
*Corresponding author. Email: yonetasrangenge@phar.unand.ac.id

ABSTRACT

Oral analgesics represent the most widely utilized medications, with usage prevalence spanning between 7% and 35% across different countries. Optimal use of these drugs is essential. The primary objective of this study is to assess the appropriateness of oral analgesic administration to patients at a primary health care facility in Padang City, Indonesia. Additionally, the study seeks to gauge patients' knowledge regarding analgesic drugs. This investigation employs a non-experimental approach characterized by a descriptive design, prospective data collection, and a cross-sectional methodology. Data are derived from patient medical records and questionnaires. The study findings reveal that all analgesics were administered at the correct dosages, were prescribed for their intended indications, and were administered through the appropriate routes. Nonetheless, there is room for improvement, as 68.9% of administrations were suitable for the patients, 15.2% resulted in drug interactions, 7.6% featured the proper drug selection, and none adhered to the ideal frequency. Furthermore, the assessment of patients' knowledge levels indicates that 57.6% possess a commendable understanding of analgesic drugs. Notably, educational attainment plays a significant role in shaping patients' knowledge levels ($P<0.05$). These research findings are poised to serve as a foundational reference point for shaping policies and initiatives aimed at enhancing healthcare practices related to rational drug utilization, with particular relevance to Indonesia.

Keywords: *rational drug use, analgetic, drug knowledge, primary health care*

Indexing : Clinical Pharmacy, Rational Drug Use

OP-111

COMMUNICATION, INFORMATION AND EDUCATION (CIE) SERVICES RELATED TO ADHERENCE TO TAKING MEDICATION FOR PATIENTS WITH TYPE 2 DIABETES MELLITUS AT RSUP H. ADAM MALIK MEDAN

Eva Sartika Dasopang[1]*, Fenny Hasanah[1], Desy Natalia Siahaan[1], Putri Salsabila[1]

[1]Fakultas Farmasi, Universitas Tjut Nyak Dhien, Medan, Indonesia
*Corresponding author, Email: evasartikadasopang@yahoo.com

ABSTRACT

One of the clinical pharmacy service standards in hospitals is related to communication, information, and education (IEC). Blood sugar levels in diabetes mellitus (DM) patients are strongly influenced by lifestyle, calorie consumption, and medications consumed. This study aims to analyze patient knowledge related to calories needed, lifestyle, and patient compliance with consuming diabetes mellitus (DM) drugs. This study is a descriptive quantitative study with simple random sampling of DM patients at H. Adam Malik Hospital Medan, March–June 2023. Patients were selected based on inclusion criteria. The data were analyzed using multiple linear regression using SPSS. The results of the study showed that knowledge of calories, knowledge of lifestyle, and compliance with drug consumption were at a moderate level, with the results being 50.02%, 63%, and 60%, respectively. The results of multiple linear regression analysis showed a relationship between adherence to taking medication and knowledge about calories and lifestyle, which is part of IEC services. The results of the study suggest that the good knowledge of DM patients is related to factors that cause an increase in blood sugar.

Keywords: *diabetes mellitus type 2, communication, information and education*

Indexing : Pharmacologi/Clinical Pharmacy

OP-112

ANTIMYCOBACTERIAL PROPERTIES OF ETHYL ACETATE EXTRACTS FROM MARINE-DERIVED ASPERGILLUS OSTIANUS AND ASPERGILLUS FLAVUS

Muhammad Azhari[1], Atik Pereztia Litanjuasari[1], Marlia Singgih Wibowo[1], Masayoshi Arai[2], Dian Handayani[3], Ade Artasasta[4], Elin Julianti[1]*

[1]Department of Pharmacochemistry, School of Pharmacy, Institut Teknologi Bandung, Bandung 40132, Indonesia
[2]Laboratory of Natural Products for Drug Discovery, Graduate School of Pharmaceutical Sciences, Osaka University, Osaka 5650871, Japan
[3]Laboratory of Sumatran Biota, Faculty of Pharmacy, Andalas University, Padang 25163, Indonesia
[4]Biotechnology Program, Department of Applied Science, Universitas Negeri Malang, Malang 65114, Indonesia
*Corresponding author. E-mail: elin_julianti@itb.ac.id

ABSTRACT

Tuberculosis remains a significant problem around the globe, especially in developing countries, including Indonesia. The situation worsened with the increasing emergence of antibiotic-resistant strains. Hence, more alternatives are required to overcome this issue. Marine-derived fungi are known to be a prolific source for obtaining bioactive secondary metabolites. This preliminary study aimed to isolate endophytic fungi from marine resources and determine their antimycobacterial activity. The research included marine sources sampling, isolation and purification of fungi, small-scale fermentation of fungi isolates, and screening for antimycobacterial activity against *Mycobacterium smegmatis*. The chosen fungi isolates were continued with molecular identification, larger scale of fermentation, and antimycobacterial assay against another strain, *Mycobacterium bovis* BCG. The antimycobacterial activity is determined using the microdilution method and visualization by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) assay. As many as 49 fungi were successfully isolated from 40 marine samples, with two fungi showing promising results, namely *Aspergillus ostianus* and *Aspergillus flavus*. The highest activity was shown by *A. ostianus* media ethyl acetate extracts, with the minimum inhibitory concentration (MIC) of 6.25 µg/mL and 50 µg/mL against *M. smegmatis* and *M. bovis* BCG, respectively, followed by *A. ostianus* biomass ethyl acetate extracts and *A. flavus* media ethyl acetate extracts with MIC of 25 µg/mL against *M. smegmatis* and 50 µg/mL against *M. bovis* BCG. The ethyl acetate extracts of *A. ostianus* media showed a prospective result to investigate further to identify the active compounds as antimycobacterial.

Keywords: *marine-derived fungi, antimycobacterium, Mycobacterium smegmatis, Mycobacterium bovis BCG, microdilution*

Supporting Agencies : Sources of research funding are part of Indonesian Collaborative Research (RKI) 2022 and Fundamental Research, The Ministry of Education, Culture, Research, and Technology (Kemdikbud Ristekdikti) 2023 with contract number 110/E5/PG.02.00.PL/2023

OP-113

CHEMOPREVENTIVE POTENTIAL OF N-HEXANE FRACTION OF KEBIUL SEEDS (CAESALPINIA BONDUC (L) ROXB.) BENGKULU ON CHORIOALLANTOIC MEMBRANES INDUCED BY BFGF

Risda Hayati[1], Nadia[1], Amey Putri Karini[1], Ayyu Shavitry[1], Ayu Nadiyah Permatasari Romdani[1], Septi Wulandari[1]

[1]School of Pharmacy, Bengkulu University, Bengkulu, 38371, Indonesia
*Corresponding author. Email: risdahayati.unib@gmail.com

ABSTRACT

Cancer is the growth or swelling of a mass of abnormal, uncontrolled and malignant cells. With the formation of these blood vessels, antiangiogenesis is needed because without a blood supply, cancer cells will die. The kebiul seed plant (*Caesalpinia bonduc* (L) Roxb.) contains secondary metabolites as anticancer. This research uses experimental methods, namely making N-Hexane extracts and fractions, Phytochemical Tests, and Antiangiogenesis Tests. The yield of kebiul seeds was 13.608%. In the phytochemical test, the n-hexane fraction of kebiul seeds gave positive results for alkaloids, flavonoids, triterpenoids and tannins. In the blank paper disc group, paper discs with DMSO solvent and paper discs induced by bFGF the average score was 0 (not active).The N-Hexane fraction with a concentration of 02 mg/ml is the most active and has the greatest and best antiangiogenesis effect with an average score of 1.66 (strong), at a concentration of 0.1 mg/ml with an average score of 1.33 (good) and at a concentration of 0.05 mg/ml with an average score of 0.83 (weak). Macroscopic observations showed that kebiul seed extract inhibited the growth of new blood vessels in the bFGF-induced CAM of chicken embryos depending on the concentration given.

Keywords: *Chemopreventive, Kebiul, bFGF, Chorioallantoic Membrane, Anticancer*

Supporting Agencies : Source of research funding by ministry of Education, Culture, Research and Technology of the Republic Indonesia and Unit Student Competency Development Technical Implementation Bengkulu University

Indexing : Pharmaceutical Chemistry

OP-114

ANALYSIS OF PHARMACISTS' KNOWLEDGE LEVEL ON DRUG MANAGEMENT WITH DRUG AVAILABILITY LEVEL IN COMMUNITY HEALTH CENTERS IN PADANG CITY

Dian Ayu Juwita[1]*, Hansen Nasif[1], Ivana Regita Viviani[1]

[1]Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatra, Indonesia
*Corresponding author. Email: dianayujuwita@phar.unand.ac.id

ABSTRACT

The Availability of drugs is one of the factors that can be used to assess the quality of community health centers and determine customer satisfaction. Pharmacists require good drug management knowledge to ensure drug availability. This research aims to determine the level of pharmacist knowledge and drug availability, as well as to identify the relationship between pharmacist knowledge and drug availability. This research is a non-experimental study with cross-sectional data collection. The research sample was taken using purposive sampling technique using a questionnaire instrument to assess pharmacist knowledge levels and Drug Usage Reports and Drug Request Sheets (LPLPO) to assess drug availability levels. Data analysis used the Chi-Square test and Spearman Rank test. The results of the study showed that the majority of pharmacists had a high level of knowledge, and the majority of community health centers had a sufficient level of drug availability, with 14 respondents (73.68%) each. From the Chi-Square test results, there was no significant relationship between sociodemographic variables and respondent knowledge. The Spearman Rank test also showed no significant relationship between pharmacist knowledge levels and drug availability.

Keywords: *drug availability; knowledge; pharmacist; community health center.*

OP-115

ANALYSIS OF PATIENT SATISFACTION WITH PHARMACEUTICAL SERVICES AT REKSODIWIRYO HOSPITAL IN PADANG CITY

Dian Ayu Juwita[1]*, Hansen Nasif[1], Annisa Rizkiia Z[1]

[1]Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatra, Indonesia
*Corresponding author. Email: dianayujuwita@phar.unand.ac.id

ABSTRACT

Patient satisfaction is one of the parameters that reflects the quality of pharmaceutical services in a hospital. Patient-oriented service demands pharmacy personnel to continuously improve and enhance their quality in terms of knowledge, skills, and behavior in pharmaceutical services. This research aims to determine the level of patient satisfaction with pharmaceutical services at the Outpatient Pharmacy of Reksodiwiryo Hospital in Padang City. This study is a non-experimental quantitative descriptive research with a cross-sectional approach using a questionnaire. The research sample was selected using purposive sampling, with inclusion criteria consisting of all patients who filled prescriptions at the outpatient pharmacy of Reksodiwiryo Military Hospital during the study period, who could communicate, read and write, were aged ≥ 17 years, and were willing to fill out the questionnaire as indicated by the informed consent form. Non-parametric Mann Whitney and Kruskall Wallis tests were used to determine the relationship between gender and occupation with the level of patient satisfaction, while the Spearman Rho test was used to determine the relationship between age and education with the level of patient satisfaction. The research results showed that the level of patient satisfaction with outpatient pharmaceutical services at Reksodiwiryo Hospital in Padang City falls into the 'very satisfied' category (82.79%). Each dimension has the following satisfaction levels: tangible dimension has a satisfaction level of 80.75%, reliability dimension 84.48%, responsiveness dimension 83.89%, assurance dimension 82.59%, and empathy dimension 82.28%. There is no relationship between gender and occupation with the level of patient satisfaction, while age and education have a relationship with the level of patient satisfaction.

Keywords: *Patient Satisfaction, Pharmacy Services, Respondent Characteristics, Outpatient Pharmacy*

OP-116

CORRELATION BETWEEN POLYPHARMACY AND POTENTIAL DRUG INTERACTION IN ICU PATIENTS AT DR. SLAMET GARUT HOSPITAL

Dina Nirwana Suwinda[1], Risa Susanti[2]*, Elsa Martine Putri[2]

[1]Dr. Slamet Garut Hospital, Jl.RSU Dr. Slamet No 12, Tarogong Kidul, Garut, West Java, 44151, Indonesia
[2]Department of Pharmacy, Faculty of Mathematics and Natural Sciences, University of Garut, Jl. Jati No. 42B, Tarogong Kaler, Garut, West Java, 44151, Indonesia
*Corresponding author. Email: risa.susanti86@uniga.ac.id

ABSTRACT

The intensive care unit (ICU) is a hospital service unit that provides medical treatment for patients with complex pathophysiological conditions that allow patients to take several drugs (polypharmacy) that can cause drug interactions. This study aimed to determine the incidence of polypharmacy and potential drug interactions and analyze the relationship between polypharmacy and potential drug interactions in ICU patients. This research was carried out in a retrospective analytical descriptive using medical records of ICU patients at dr. Slamet Garut Hospital for the period January-March 2023. Potential drug interactions were evaluated using Medscape, Drug.com, Lexicomp, and Stockley's Drug Interaction 9th edition, and analyzed using the Chi-Square correlation test. This study found that male patients had a higher incidence of being treated in the ICU (54%). Of the 24 medical records that showed polypharmacy (≥5 drugs), there was potential for drug interactions (95.8%), with moderate severity being the most common (74.3%) and pharmacodynamics being the most common interaction mechanism (46.1%). The Chi-Square correlation test analysis obtained a p-value <0.05, which shows a relationship between polypharmacy and potential drug interactions in the ICU patient at dr. Slamet Garut Hospital for the period January-March 2023.

Keywords: *Polypharmacy, Drug Interaction, ICU Patient*

Indexing : Clinical Pharmacy

OP-117

INCREASED DISSOLUTION RATE OF ACECLOFENAC BY FORMATION OF MULTICOMPONENT CRYSTALS WITH L-GLUTAMINE

Adhitya Jessica[1], Sirly Wahyuni N. Yasa[1], Erizal Zaini[1], Lili Fitriani[1]*

[1]Faculty of Pharmacy, Universitas Andalas, Limau manis 25163, Padang, West Sumatera, Indonesia
*Corresponding author. Email: lilifitriani@phar.unand.ac.id

ABSTRACT

The objective of this scrutiny was to improve the solubility as well as the rate of dissolution of aceclofenac (ACF) through the formation of multicomponent crystals (MCC) working with L-glutamine as a coformer and following the liquid-assisted grinding (LAG) technique. Powder X-ray Diffractometer (PXRD), Differential Scanning Calorimeter (DSC), Fourier Transform Infrared (FT-IR) spectrometer, and Scanning Electron Microscope (SEM) were used for MCC characterisation. A UV spectrophotometer was used to analyze solubility and dissolution experiments. The results showed a decrease in the diffraction peak intensity, melting point, and enthalpy of fusion. FT-IR analysis showed a non-significant wavenumber shift compared to intact components. These characterizations showed that MCC form a eutectic mixture. SEM and particle size analysis of MCC showed a homogeneous particle rod shape and decreased in particle size. ACF's solubility in MCC increased 2.21 times more than it did in intact form, according to the solubility test. MCC's rate of dissolution increased by 5.34 times and 5.56 times, respectively, after 60 minutes in phosphate buffer pH 6.8 and CO2-free distilled water. The synthesis of MCC ACF and L-glutamine considerably enhances the solubility and dissolution rate of ACF.

Keywords: *Aceclofenac, L-glutamine, multicomponent crystal, eutectic mixture, solubility, and dissolution rate.*

Supporting Agencies : Source of research funding by the Faculty of Pharmacy at Universitas Andalas through the Dosen Pemula program with grant number 09/UN16.10.D/PJ.01./2022.

Indexing: Eutectic mixture

OP-118

BALANCING ACT: INVESTIGATING THE IMPACT OF PURIFIED GAMBIR AND VITAMIN C ON AST LEVELS

Yoneta Srangenge[1], Annisatulkhairat[1], Almahdy A[1]*

[1]Faculty of Pharmacy, Universitas Andalas, Padang, West Sumatra, Indonesia
*Corresponding author. Email: almahdya@phar.unand.ac.id

ABSTRACT

Purified Gambir (*Uncaria gambir* Roxb.) and vitamin C are well-documented for their potent antioxidant properties. However, the synergistic effects of combining these compounds to the AST level as pro-oxidant balance have not been explored in prior research. This research aims to investigate the impact of administering a combination of purified Gambir (*Uncaria gambir* Roxb.) and vitamin C on the pro-oxidant balance within the body. In this study, 25 healthy male white mice were divided into five groups: a negative control group, a positive control group, a purified Gambir group, a vitamin C group, and a group receiving both purified Gambir and vitamin C. Dosing for each group was determined based on prior research. The experiment commenced with a seven-day administration of these compounds to the mice. On the eighth day, the mice underwent rigorous physical activity in the form of swimming to induce free radicals. Following this, we measured AST (Aspartate Aminotransferase) levels as an essential metric to gauge pro-oxidant balance. The research findings demonstrated significant discrepancies in AST levels among the various treatment groups ($p<0.05$). In summary, this research indicates that the administration of these compounds has a noteworthy impact on reducing AST levels in mice, with the most favorable outcome observed when purified Gambir and vitamin C are administered together. This study is expected to serve as a valuable reference for the development and application of therapeutic interventions involving Gambir and vitamin C.

Keywords: *Purified Gambir, Vitamin C, Maximal physical activity, pro-oxidant, AST*

Indexing : Pharmacology; pro-oxidant activity

OP-119

IN SILICO STUDY OF ANALOG ALOIN ON HUMAN SERUM ALBUMIN PROTEIN AS AN ANTIGLYCATION AGENT IN DIABETES MELLITUS

Nurrizka Kurniawati[1]*, Nurul Hidayatul Mar'ah[1], Arikha Ayu Susilowati[1]

[1]Pharmacy Department, Stikes Bhakti Husada Mulia Madiun, Indonesia
* Corresponding author. Email: nurrizkak@gmail.com

ABSTRACT

The incidence of diabetes in Indonesia has had an increasing trajectory in recent years. Data provided by the International Diabetes Federation (IDF) shows that Indonesia has an approximate population of 10.3 million individuals affected by diabetes in the year 2019. One of the causes of this growth is the production of AGEs (advanced glycation end products). The formulation of advanced glycation end products (AGEs) is significantly impacted by lifestyle choices, particularly in the contemporary era of globalization. Human Serum Albumin (HSA) is a protein susceptible to glycation attacks. Aloin is an inherent chemical compound scientifically shown to exhibit inhibitory activities against advanced glycation end products (AGEs). Therefore, a further study was conducted on analogous of aloin concerning the HSA protein. The study used docking methods with AutoDock4, optimized with Gaussian. The results indicate that out of the nine analogous of aloin, which are compositions of Aloe vera and Knoxia valerianoides roots, they showed a binding energy of -9.9 kcal/mol and could interact with the glucose inhibition targets, namely Lys and Arg. The predicted potential antiglycation order for the analogous compounds is as follows: Rubiadin (A9) and Lucidin (A8).

Keywords: *Molecular Docking, Analog aloin, AGEs, Diabetes Miletus*

Indexing : Pharmaceutical Chemistry

OP-120

ANTIOXIDANT ACTIVITIES OF KALE LEAVES (BRASSICA O LERACEA VAR. SABELLICA) EXTRACT

Fendi Yoga Wardana[1]*, Lisa Septa Diana Putri[1]

[1]Department of pharmacy, Faculty of Saint and Technology, Institut Teknologi, Sains dan Kesehatan RS dr Soepraoen, Kesdam V/BRW, Malang, 65147, Indonesia
*Corresponding author. Email: fendiyoga@itsk-soepraoen.ac.id

ABSTRACT

Kale (*Brassica oleracea* var. *sabellica*) is a vegetable whose leaves contain lots of flavonoids, alkaloids, saponins, tannins and phenols. Flavonoids have benefits as antioxidants because they can stabilize free radicals, thereby reducing cell damage due to inflammation. This research aims to determine the antioxidant activity of kale leaves extract. This type of research is experimental research. Kale leaves were extracted using the maceration method with ethanol solvent and the secondary metabolite content was identified through phytochemical screening. Antioxidant activity was determined using UV-visible spectrophotometry with 1,1-Diphenyl-2-picryhydrazyl (DPPH) reagent at a wavelength of 518 nm. The concentrations used in the antioxidant assay of extract kale leaves were 10 µg/mL, 50 µg/mL, 100 µg/mL, 150 µg/mL and 200 µg/mL. The results of determining the antioxidant activity of extract kale leaves obtained an IC50 value of 8.97 µg/mL. Based on this research, the antioxidant activity of extract kale leaves is classified as very strong.

Keywords: *Antioxidant, DPPH (1,1-Diphenyl-2-picryhydrazyl), Kale, UV-visible spectrophotometry*

OP-121

SOXHLET EXTRACTION AND FT-IR SPECTROSCOPY COUPLED TO CHEMOMETRICS: AUTHENTICATING BEEF AND PORK RENDANG

Syofyan Syofyan[1], Rismah Fadillah[1], Detta Zehanna[1], Dachriyanus Hamidi[1], Suryati Syafri[1]*

[1]Faculty of Pharmacy. Universitas Andalas. Padang. West Sumatera. Indonesia
*Corresponding author Email: suryati@phar.unand.ac.id

ABSTRACT

Authentication testing for the halal status of food products is vital and must be considered when Muslims consume food. This research aimed to discriminate beef fat and lard (pig and wild boar) of rendang using a Fourier Transform Infra-Red (FTIR) combined with chemometric analysis. The rendang training data set was made from beef and pork (pig and wild boar) with 11 concentrations. Rendang testing data set was obyain from several restaurants in Padang. Fat was extracted using the soxhletation method and then analyzed using ATR FTIR spectroscopy at 4000-400 cm-1 wave numbers. The discriminant analysis (DA) was used to discriminate fat, while the Principle Component Regression (PCR) and Partial Least Square (PLS) models were used for quantification analysis. The result showed DA could classify rendang without misclassification at wave numbers of 1400-1000 cm-1 (training data set of pig) and 2800-1000 cm-1 (training data set of wild boar). About seven of ten rendang data sets were identified as beef, but three of them failed. In quantitative analysis, the best PCR model for pig was at a wave number of 1500-1000 cm-1 with a calibration R2 value of 0.9946, predicted R2 0.9926, RMSEC 0.0327, and RMSEP 0.0464. The best PLS model for wild boars was at wave numbers 1400-1000 cm-1 with the R2 calibration value of 0.9974, R2 prediction 0.9875, RMSEC 0.0229, RMSEP 0.0572. FTIR spectroscopy combined with chemometrics successfully classified and quantified beef fat and lard (pig and wild boar) in rendang. However, it is necessary to validate the three rendang datasets that failed to identify as beef using the DNA-based method.

Keywords: *Soxhlet; FTIR; beef; pig; wild boar; chemometrics.*

OP-122

TENOXICAM-TROMETHAMINE MULTICOMPONENT CRYSTAL: PHYSICOCHEMICAL CHARACTERISTICS, SOLUBILITY, AND DISSOLUTION EVALUATION

Uswatul Hasanah[1], Yesica Azfitri[2], Lili Fitriani[1], Erizal Zaini[1]*

[1]Department of Pharmaceutics, Faculty of Pharmacy, Universitas Andalas, Padang, 25163, Indonesia
[2]Faculty of Pharmacy, Universitas Andalas, Padang, 25163, Indonesia
*Corresponding author. Email: erizal@phar.unand.ac.id

ABSTRACT

Tenoxicam belongs to nonsteroidal anti-inflammatory drug in the treatment of musculoskeletal disorders. The efficacy is constrained by its limited aqueous solubility. This study aims to form a multicomponent crystal of tenoxicam and tromethamine, which enhances the solubility and dissolution of tenoxicam. The multicomponent crystal was prepared in a drug-coformer equimol using a solvent drop grinding technique. The physicochemical characteristics were obtained using powder X-ray diffraction (PXRD), differential scanning calorimetry (DSC), and FT-IR spectroscopy. The solubility and dissolution test was carried out to evaluate the effectivity of multicomponent crystal forming compared to intact tenoxicam. The solubility test was carried out in CO2-free distilled water for 48 hours and quantified by spectrophotometry UV at 368 nm. The dissolution profile test was performed using a USP type II dissolution apparatus in HCl 0.1 N and CO2-free distilled water medium. The multicomponent crystal showed a unique pattern on the diffractogram, the decreased melting point, and the shifted peaks of the FT-IR spectrum. The solubility of tenoxicam in a multicomponent crystal system exhibits an increase of 11.130-fold. The tenoxicam dissolution efficiency in HCl 0.1 N and CO2-free distilled water increased 2.600 times and 8.605 times at 60 minutes. In conclusion, the formation of multicomponent crystal tenoxicam and tromethamine using a solvent drop grinding technique resulted a novel crystalline structure, thereby enhancing the solubility and dissolution of tenoxicam.

Keywords: *tenoxicam, tromethamine, multicomponent crystal, solvent drop grinding, solubility, dissolution*

Supporting Agencies: This research was funded by Universitas Andalas with grant number: T/59/UN16.19/PT.01.03/KO-RPT/2023

Indexing: Pharmaceutical Technology

OP-123

EXPLORING THE PHARMACOINFORMATICS POTENTIAL OF MORUS MACROURA COMPOUNDS FOR DRUG DEVELOPMENT

Purnawan Pontana Putra[1], Aiyi Asnawi[2], Fariza Hamdayuni[1], Arfan[3], La Ode Aman[4]

[1]Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Universitas Andalas, Padang, 25175, Indonesia,
[2]Faculty of Pharmacy, Bhakti Kencana University, Bandung, 40614, Indonesia,
[3]Department of Pharmaceutical Analysis and Medicinal Chemistry, Faculty of Pharmacy, Universitas Halu Oleo, Kendari, 93132, Indonesia,
[4]Department of Chemistry, Faculty of Sciences and Mathematics, Universitas Negeri Gorontalo, Gorontalo, 96128, Indonesia
*Corresponding author. Email: purnawanpp@phar.unand.ac.id

ABSTRACT

Pharmacoinformatics is an innovative approach rapidly evolving in pharmaceutical research and drug development. In this context, this study focuses on the analysis of *Morus macroura*, a plant species with untapped pharmacological potential. The aim of this investigation is to leverage pharmacoinformatics techniques to unveil the hidden potential of *Morus macroura* in drug discovery and development. The study includes analyses of protein-protein interactions, deep learning docking, adsorption tests, distribution, metabolism, excretion, and molecular dynamics simulations. From these analyses, nine active compounds were identified in *Morus macroura*, namely Andalasin A, Guangsangon K, Guangsangon L, Guangsangon M, Guangsangon N, Macrourone C, Mulberrofuran G, Mulberrofuran K, and Mulberroside C. These compounds exhibit protein-protein interaction activities against a cytochrome P450 monooxygenase that catalyzes the conversion of C19 androgens. Furthermore, KEGG Disease and OMIM data revealed that these plant compounds influence aromatase excess syndrome, deficiency, and ovarian dysgenesis. Molecular deep learning docking simulations yielded affinity results of -9.62 kcal/mol for Guangsangon M, -10.44 kcal/mol for Macrourone C, and -10.99 kcal/mol for Guangsangon L. In terms of drug-likeness, Mulberroside C demonstrated good absorption potential by adhering to Lipinski's rule of five. Subsequent molecular dynamics simulations indicated that Guangsangon L and Macrourone C remained stable during a 100 ns simulation. Finally, the analysis of binding stability using Generalized Born and Surface Area Solvation (MMGBSA) was conducted. This study provides valuable insights into the potential of *Morus macroura* compounds for drug development, offering a promising avenue for the discovery of novel pharmaceutical agents.

Keywords: *Pharmacoinformatics, Morus macroura, Protein-protein interactions, Deep Learning docking, Molecular dynamics*

Supporting Agencies : Faculty of Pharmacy, Universitas Andalas

Indexing : Pharmaceutical Chemistry

OP-124

PURIFIED GAMBIR (UNCARIA GAMBIR (HUNTER) ROXB.) ATTENUATE RENAL FUNCTION IN ALLOXAN-INDUCED DIABETIC MALE RATS

Fitri Rachmaini[1], Armenia[1]*, Rahmad Abdillah[1], Siti Noor Asyikin Haqqi[1]

[1]Department of Pharmacology, Faculty of Pharmacy, Universitas Andalas, Limau Manis 25163, Padang, West Sumatera, Indonesia
*Corresponding author. Email: armenia@phar.unand.ac.id

ABSTRACT

Diabetes and its vascular complications could prevent by antioxidants. Purified gambir is the purifief extract of *Uncaria gambir* (Hunter) Roxb. which contains more than 90% catechins and scientifically work as antioxidant. This study aimed to determine the effect of purified gambir on renal function in alloan-induced diabetic Wistar Kyot rats. Diabetic rats were induced by alloxan 125 mg/kgBW by intraperitoneal injection. Fourty five diabetic rats were duvuded into five groups, diabetic control group treated with vehicle, a positive control group treated with glibenclamide at dose 0.45 mg/kg BW, and treatment groups of purified gambir at doses of 2.50, 5, and 10 mg/kg BW for 14 days. Blood glucose, water intake, urine volume, creatinine clearance, renal ratio, and urine density were measured on day 3, 7, and 14. All data were analyzed by two-way ANOVA followed by Duncan Multiple Range Test. Purified gambir significantly lower blood glucose ($p<0.05$) and had a significant effect ($p<0.05$) on renal function parameters in diabetic rats. Duration of treatment purified gambir in diabetic rats had a significant effect ($p<0.05$) on water intake, urine volume, creatinine clearence and renal ratio. This result show that purified gambir at dose 2.5 mg/kg BW increased renal function of diabetic rats, in contrast, purified gambir at dose 5 and 10 mg/kg BW attenuate renal function of diabetic rats

Keywords: *antioxidant, blood glucose, purified gambir, renal function, creatinine clearance*

Supporting Agencies : Source of research funding by research and community service institute (LPPM) of Universitas Andalas in 2023 with number of contract T/25/UN16.19/PT.01.03/KO-RPT/2023 on April 4th 2023.

Indexing : Pharmacology

OP-125

PHARMACIST'S RESPONSE TO SIGNS AND SYMPTOMS OF DISEASES IN THE COMMUNITY PHARMACY

Dedy Almasdy[1]*

[1]Faculty of Pharmaceutical Science, Andalas University, Padang, Indonesia
*Corresponding author. Email: dedyalmasdy@phar.unand.ac.id

ABSTRACT

Self-care is a process in which individuals function on their own behalf regarding health promotion; health decision-making; and prevention, detection, and treatment of diseases or other health problems. Pharmacists in pharmacies are the first health professionals who serve the community to consult the health problems they face. The research was conducted on community pharmacy customers using the structured interview. The customer's self-medication pattern has been documented. Naronjo algorithms have been used to analyze the probability of signs and symptoms induced by medication, while classification to 'minor illnesses' and 'serious diseases' was based on the criteria that have been developed. The validity of the criteria has been calculated by determining the level of agreement (kappa statistic) with other health professionals i.e. medical doctors and pharmacists. Other statistical procedures, such as chi-square, Mann Whitney U, and logistic regression, have been conducted. A total of 285 customers were interviewed. The majority of the customers' signs and symptoms (95.68%) were 'possibly' drug-induced. The customer's signs and symptoms have been classified as 'minor illnesses' (75.8%), while the rest were 'serious diseases' (24.2%). Based on ATC system, the signs and symptoms were classified as respiratory system problems (28.1%), dermatological problems (22.8%), and alimentary and metabolism problems (15.6%). The risk factors for serious diseases were education and the signs and symptoms. Pharmacists can contribute to disease screening in the community pharmacy. This role will provide benefits to society not only clinically, but also economically.

Keywords: *community pharmacy, self-medication, self-care, pharmacist's response, pharmacist's sign and symtom respons*

OP-126

METABOLITE PROFILING AND ANTIOXIDANT ACTIVITIES OF LUNGGO (CITRUS MEDICA L.) PEELS AND LEAVES ESSENTIAL OILS

Elidahanum Husni[1], Dean Pavvellin[1], Cahayu Putri N[1], Dita Olenda Harefa[1], Hafizatul Hidayah[1], Suryati Syafri[1]*

[1]Faculty of Pharmacy, Andalas University, Padang, West Sumatera, Indonesia
*Corresponding Author: suryati@phar.unand.ac.id

ABSTRACT

Lunggo (*Citrus medica* L.) is a type of orange that has an appearance like a lemon and is usually consumed as a functional food, both as a drink and for medicinal purposes. Few studies report the antioxidant activities of Lunggo (*Citrus medica* L.) peels and leaves essential oil. This study aims to determine metabolite profiling and antioxidant activity of essential oils of Lunggo leaves and peels. Essential oils were obtained by the hydrodistillation method. Metabolite profiling was carried out by using FTIR and GC-MS methods. Antioxidant activity was determined using the ABTS method and FRAP method. The results showed that the primary metabolites of Lunggo peel essential oil were D-limonene (41,856%), Citral (17,062%), and β-Myrcene (2,991%). In comparison, the essential oil of Lunggo leaves contains D-limonene (29,106%), Citral (14,723%), Geranyl acetate (7,609%). The antioxidant activity of Lunggo peels essential oils was stronger than Lunggo leaves essential oils. The ABTS method shows the IC50 value for Lunggo peels essential oil was 522,613 ppm and 35,146 ppm for Lunggo leaves essential oil. Meanwhile, using the FRAP method, the antioxidant activity of Lunggo peels essential oil was 3755.311 nmol/µL and 5154.579 nmol/µL for Lunggo leaves essential oils. It can be concluded that the antioxidant activity of Lunggo leaves was stronger than Lunggo peels. However, the antioxidant activity of lunggo peels and leaves essential oils is still not as strong as trolox and ascorbic acid.

Keywords: *Lunggo, Essential Oil, FTIR, GC-MS, Antioxidant*

OP-127

METABOLITE PROFILING, ANTIBACTERIAL, AND ANTI-TYROSINASE ACTIVITY OF TEMU KUNCI (BOESENBERGIA ROTUNDA (L.) MANSF.)

Suryati Syafri[1], Amanda Zulfika Putri[1], Faincornellis Dehotman Zai[1], Nabilah Nur Hanifah[1],Yohannes Alen[1], Dachriyanus Hamidi[1]*

[1]Faculty of Pharmacy, Andalas University, Padang, West Sumatera, Indonesia
*Corresponding author email: dachriyanus@phar.unand.ac.id

ABSTRACT

The skin is the largest human organ, directly exposed to the environment and thus vulnerable to microbial infection and aging. Essential oil from temu kunci rhizome is one of the natural sources that can be utilized because it is safer and more readily available. This study aims to identify the chemical content, antibacterial activity, and anti-enzyme tyrosinase. Essential oil of temu kunci was obtained by hydrodestillation method, and its content was analyzed using ATR-FTIR and GC-MS spectroscopy. Antibacterial activity was carried out by dilution method against Gram-positive *Staphylococcus aereus* and Gram-negative *Escherichia coli*. Meanwhile, anti-tyrosinase enzyme activity was carried out by measuring dopachrome inhibition, where kojic acid was a positive control. The results of GC-MS analysis showed the major compounds were ((+)-2-Bornanone (28.433%), Ocimene (16.689%), Geraniol (15,051%), Eucalyptol (10, 854%), Terpineol (7.527%), Camphene (4.302%), B-(Z)-Ocimene (4.036%). The results of the antibacterial activity revealed that the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC)of temu kunci essential oil for both bacteria were 100 mg/ml. The finding on the anti-tyrosinase activity of kojic acid gave an IC50 value of 4.14 µg/ml, while the temu kunci essential oil has an IC50 of 36.228 µg/ml. It can be concluded that temu kunci essential oil has strong anti-tyrosinase activity but weak antibacterial activity.

OP-128

UNRAVELING THE WOUND HEALING POTENTIAL OF WHITE TURMERIC (CURCUMA ZEDOARIA ROSC) ESSENTIAL OIL FROM VARIOUS REGIONS IN WEST SUMATERA USING FT-IR/GC-MS SPECTROSCOPY IN COMBINATION WITH CHEMOMETRIC ANALYSIS

Suryati Syafri[1], Sary Rahma Dewiana[1], Ghada Nabila Gari Lindo[1], Dachriyanus Hamidi[1]*

[1]Faculty of Pharmacy. Universitas Andalas. Padang. West Sumatera. Indonesia
*Corresponding author Email: suryati@phar.unand.ac.id

ABSTRACT

The discovery of natural wound medicine, particularly from essential oils, is an effort to acquire new sources of effective, safe, and affordable treatment. The purpose of the study is to determine wound healing activity and classify white turmeric essential oil (WTEO) originating from various regions in West Sumatera, Indonesia, using FT-IR and GC-MS coupled with chemometrics. WTEO was obtained by the hydrodistillation method. FT-IR and GC-MS spectra of WTEO were analyzed using PCA (Principal Component Analysis) and HCA (Hierarchical Cluster Analysis) to classify them. Wound healing activity was assessed using fibroblast cell proliferation and migration assay. The data was analyzed using one-way ANOVA. Wound healing assay revealed WTEO with 1 µg/ml concentrations and 0.1 µg/ml resulted in the highest proliferation of fibroblast cells (> 100%). But, there was no significant difference with curcumin as a positive control ($p > 0.05$). The incubation time significantly affected fibroblast cell migration with a $p < 0.05$. On 48 hours of incubation with a concentration of 1 µg/ml, WTEO has better migration activity than curcumin as a positive control. WTEO was classified into three cluster-based PCA and HCA analyses. The main constituent of WTEO were Iso-velleral, camphore, germacrone, and epicurzerenone. In conclusion, the main constituent of WTEO from various regions was similar, but the percentage was different. WTEO had the potential to be developed as a wound-healing agent.

Keywords: *White turmeric; essential oil; FTIR; GC-MS; Chemometrics; wound healing activity.*

OP-129

THE TERATOGENIC EFFECT OF DIETHYLENE GLYCOL (DEG) ON FETUS MORPHOLOGY OF WHITE MICE (MUS MUSCULUS L.)

Elsa Badriyya[1], Joyce Artha Roslina Siregar[1], Almahdy A[1]*

[1]Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Andalas
*Corresponding author. Email: almahdya@phar.unand.ac.id

ABSTRACT

Diethylene Glycol is listed in the Inventory of Cosmetic Ingredients as a solvent, viscosity controller, and fragrance. Most of diethylene glycol's toxicity is caused by ingesting the contaminated product. This study aims to determine the effect of a teratogen caused by diethylene glycol on mice fetuses. In this study, 20 mice were used, which were divided into four groups. Diethylene glycol was given with three variations of doses 1662.5, 3325, and 6650 mg/kgbw during the organogenesis period, day 6-15. The effects of teratogens observed were maternal body weight, fetal body weight, and number of fetuses, which were analyzed using one-way ANOVA, as well as morphological and skeletal abnormalities, which were analyzed descriptively. Based on the results of the study, there was a significant difference in the body weight of the mice given DEG and the control group ($p<0.05$). There was no significant difference in body weight and the number of fetuses in the control and treatment groups ($p>0.05$). On the results of fixation of Bouins' solution, defects in the form of hemorrhage, resorption sites, and slow growth were found, but there were no defects in the cleft palate. At the same time, the results of the fixation of alizarin red solution found defects in the sternal, nasal, caudal, metacarpal, metatarsal, and phalangal bones. The conclusion based on the research is that DEG has the potential to provide teratogenic effects on mouse fetuses.

Keywords: *diethylene glycol, teratogen, morphology, skeletal, toxicity.*

Supporting Agencies : Source of research funding by The Research Grant of the Faculty of Pharmacy (DIPA) in 2023, with number of contract 21/UN16.10.D/PJ.01./2023

Indexing : Pharmacology-Clinical Pharmacy

OP-130

COST-UTILITY ANALYSIS OF AMLODIPINE AND CANDESARTAN COMBINATION IN HYPERTENSION PATIENTS IN ANDALAS UNIVERSITY HOSPITAL

Nabila Al Rizka[1], Dian Ayu Juwita[1], Najmiatul Fitria[1]*

[1]Department Pharmacology and Clinical Pharmacy. Faculty of Pharmacy. Universitas Andalas. Padang. Indonesia
*Corresponding author. Email: najmiatulfitria@@phar.unand.ac.id

ABSTRACT

Antihypertensive drugs require high costs because they are used over a long period. Therefore, consideration is needed in drug selection requirements, effectiveness, and price. This study aimed to see the beneficial results of hypertension therapy and the non-medical costs incurred by patients using cost-utility analysis (CUA). The incremental Cost-Utility Ratio (ICUR) of antihypertensive treatment was calculated using cost-utility data obtained through questionnaires and patient medical records. The number of respondents in this study was 67, consisting of 23 respondents (34.33%) using Amlodipine alone and 44 respondents (65.67%) using the Amlodipine-Candesartan combination were outpatients at Andalas University Hospital in February who met the inclusion and exclusion criteria. Utilities were obtained from the EQ-5D-5L questionnaire, and the costs used were from a patient perspective consisting of direct medical and non-medical costs. The ICUR value obtained was Rp7.318.674,-/utility for the increase in quality years of life (QALYs) using the Amlodipine-Candesartan combination. The difference in the average utility value of the Amlodipine-Candesartan combination with Amlodipine alone is -0.02, and the difference in cost is -Rp12,224,-. Based on the cost-utility diagram, the Amlodipine-Candesartan combination group is included in the southwest quadrant (quadrant III), which illustrates that the cost required for the Amlodipine-Candesartan combination group is lower than the cost of the Amlodipine single treatment group and the outcome is also not better (slightly lower or the same).

Keywords: *Hypertension, Amlodipine, Candesartan, Utility, Cost-utility analysis*

Indexing : Pharmacoeconomic

OP-131

CORRELATION BETWEEN FAMILY SUPPORT AND HEALTH PROFESSIONAL EDUCATION ON TUBERCULOSIS PATIENT COMPLIANCE AT PUBLIC HEALTH CENTERS TASIKMALAYA

Doni Anshar Nuari[1], Genialita Fadhilla[1]*, Wulansari

[1]Pharmacy, Faculty of Mathematics and Natural Science, University of Garut, Garut, West Java, Indonesia
*Corresponding author. Email: genialita@uniga.ac.id

ABSTRACT

Tuberculosis prevalence in Indonesia is still high, as 824,000 people are infected with Tuberculosis (Indonesia Basic Health Research 2022). This shows that Tuberculosis is still difficult to control due to various factors, including patient compliance. Patient compliance can be influenced by family support and health professional's education about Tuberculosis therapy, which plays an important role in increasing knowledge of correct therapy for patients and families. This study examines the influence of family support and health professional education on tuberculosis patient compliance. This is a descriptive study with cross-sectional method. Data was collected from 52 Tuberculosis patients who met the inclusion criteria using a questionnaire. The result shows that family support and health professional education had very good scores (84.6% and 46.2%) on Tuberculosis patients. This affects patient compliance is very good (82.7%). Based on correlation results, it shows that there is a direct influence of family support (p-value<0.05). At the same time, there is an indirect influence of health professional education on patient compliance (p-value>0.05). This shows that family support has a greater direct influence than health professional education on tuberculosis patients' compliance. However, health professional still play an important role because the patient's family also receives education from health professional.

Keywords: *Tuberculosis; compliance; family; education; health professional*

Indexing : Clinical and community pharmacy

OP-132

BROMELAIN GRANULES FORMULATION AND EVALUATION USING FACTORIAL DESIGN

Utami Budhi Fadilla[1], Salman Umar[1], Rama Feriska Putra[1], Afriwaldi[2], Yufri Aldi[1]

[1]Faculty Of Pharmacy, Universitas Andalas, Padang, Indonesia
[2]Faculty Of Medicine, Universitas Andalas, Padang, Indonesia
*Corresponding author. Email: salman@phar.unand.ac.id

ABSTRACT

Objective: Enzyme formulations are still rarely found, this is because the unstable nature of enzymes that influenced by temperature, pH and concentration. Bromelain is a proteolytic enzyme derived from the pineapple plant (*Ananas comosus* L) with various activities, especially as an anti-inflammatory.
Methods: This research aims to determine a good bromelain granules formula. The experimentally using a factorial design, and slugging method with variations of HPMC 2% and 5% and amprotab 3% and 5% as a binder.
Results: The resulting granules were evaluated including the physical properties of the granules, protein content and protease activity. The results showed that HPMC 2%, 5% and Amprotab 3% and 5% had good physical properties with a normality value of p>0.005. flow was significant with a significance value of 0.030.
Conclusion: From the results obtained, the physical properties of the four formulas were good, the protease activity test was obtained on the bromelain granule formulation was 0.06 units/ml. The best formula will continue to be tested as an anti inflammatory.

Keywords: *Bromelain, Physical Properties, HPMC, Amprotab, sluging*

OP-133

PHYSICAL CHARACTERISTICS AND RELEASE PROFILE OF CENTELLA ASIATICA/HONEY/κ-CARRAGEENAN-BASED HYDROGEL FILM TO PROMOTE DIABETIC FOOT ULCER MANAGEMENT

Sari Meisyayati[1'2]*, Amirah Adlia[1], Aluicia Anita Antarini[1], I Ketut Adnyana[1]

[1]School of Pharmacy, Bandung Institute of Technology, Bandung 40132, Indonesia
[2]STIFI Bhakti Pertiwi, Palembang 30129, Indonesia
*Corresponding author. Email: sari.meisyayati@gmail.com

ABSTRACT

Centella asiatica, honey, and κ-carrageenan previously showed potential bioactivity for chronic wound healing. The combination of these sustainable ingredients was hoped to have an advantage in promoting diabetic foot ulcer management. In this study, *Centella asiatica*/honey/κ-carrageenan-based hydrogel film was evaluated based on its physical characteristics and released active ingredients, including film thickness, tensile strength, elongation at break, elastic modulus, and swelling capacity. The release of Centella extract represented by asiaticoside was measured by LC-MS. Meanwhile, the release of honey is represented by reducing sugar content, as evaluated by the DNSA method. The film was known to have a thickness of 0.5 ± 0.043 mm, a tensile strength of 2.045 ± 0.16 N/mm2, an elongation at break of 136.25 ± 10.23%, and an elastic modulus of 1.504 ± 0.92 N/mm2. It rapidly absorbed liquid with a swelling capacity of 148.03 ± 5.44% in the 1st hour and continued to increase to 233.37 ± 4.72% after 24 hours. Furthermore, it was known that asiaticoside was released at the 1st hour for 68.72 ± 2.72% and continued to increase to 91.49 ± 1.79% until twelve hours and then decreased to 72.93 ± 2.63% after 32 hours. Reducing sugar of honey was released at 82.19±2.10% at the 1st hour and continued to increase to 105.34±2.71% in 8hours, then started to decrease until 67.85±0.61% in 32 hours. Based on this, it can be concluded that Centella asiatica/honey/κ-carrageenan-based hydrogel film was elastic and flexible so that it was conformable to various body parts. It also had the potential to absorb wound exudate quickly and efficiently and release the active ingredients into the wound.

Keywords: hydrogel film, physical characteristic, release profile, diabetic foot ulcer

OP-134

DEVELOPMENT OF NANOVESICULAR SYSTEMS FOR TRANSDERMAL DELIVERY OF ATORVASTATIN CALCIUM

Pramulani Mulya Lestari[1'2],*Silvia Surini[1], Yahdiana Harahap[3], Melva Louisa[4]

[1]Laboratory of Pharmaceutics and Pharmaceutical Technology Development, Faculty of Pharmacy, Universitas Indonesia, Depok, West Java, Indonesia
[2]Department of Pharmaceutics, Faculty of Pharmacy and Science, Universitas Muhammadiyah Prof. DR. HAMKA, Jakarta, Indonesia
[3]Laboratory of Bio Availability/Bio Equivalence (BA/BE), Faculty of Pharmacy, University of Indonesia, Depok, 16424, Indonesia
[4]Department of Pharmacology and Therapeutics, Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia
*Corresponding author. Email: silvia@farmasi.ui.ac.id

ABSTRACT

Oral atorvastatin calcium is one of the most effective antihyperlipidemics. However, this substance is first pass metabolized in the liver, resulting in limited oral bioavailability. This issue can be solved by transdermal delivery. The stratum corneum in the skin's outermost layer prevents drugs from passing through the skin as quickly as they do through other biological membranes. Creating a vasicular system with lipid carriers such as transethosomes could be an option to overcome this problem. This research aims to produce transethosomes that meet the transdermal delivery criteria. Using classical methods, nine transethosomal formulas were prepared with different concentrations of soy lecithin, namely 1% - 5% and ethanol 20% - 30%. The physicochemical characteristics of the transethosomes were assessed for particle size, polydispersity index, zeta potential, drug content, particle size distribution and deformability index. The findings of this research demonstrate appropriate particle sizes for transdermal delivery, monodisperse particles with narrow particle size distributions, zeta values greater than ± 30 mV and a good deformability index for transdermal delivery. This study demonstrates that all formulations satisfy the requirements for a transdermal administration system.

Keywords: *Atorvastatin calcium, transethosome, transdermal.*

Indexing: Pharmaceutical technology

OP-135

FACTORS ASSOCIATED WITH TREATMENT ADHERENCE AMONG HYPERTENSIVE PATIENTS IN SAMARINDA CITY HOSPITAL: A CROSS-SECTIONAL STUDY

Sinta Ratna Dewi[1,2]*, Almahdy Almahdy[1], Hardisman Dasman[3], Syofyan Syofyan[1]

[1]Faculty of Pharmacy, Andalas University, Padang, Indonesia
[2]Faculty of Pharmacy, Universitas Muhammadiyah Kalimantan Timur, Samarinda, Indonesia
[3]Departemen of Public Health and Community Medicine, Andalas University, Padang, Indonesia
*Corresponding author. Email: almahdya@phar.unand.ac.id

ABSTRACT

Hypertension is one of the most frequent degenerative disorders, with consequences causing morbidity and mortality. Medication adherence is important in the long-term treatment of hypertension because it reduces the risk of complications.

Objective: This study is to determine the relationship between the factors that influence medication adherence.

Methods: This study is a type of analytical survey research with a cross-section design. Research data obtained from primary data using the MMAS-8 questionnaire and questionnaires related to factors affecting compliance have been tested for validation and reliability. The analysis test used a *chi-square* relationship and the strength of the relationship parameter was assessed by *Odds Ratio (OR*) and logistic *regression analysis*.

Results: There were 195 respondents, the result of high adherence level was 11%, moderate adherence level was 28.7% and low adherence level was 65.6%. The results of the analysis, gender factors (P= 0.044, OR = 0.539), level of knowledge (P= 0.012, OR = 2.273), duration of hypertension (P= 0.04, OR = 0.47), insurance (P= 0.004, OR = 0.107) have a relationship with adherence to taking anti-hypertensive drugs. Based on the regression results, the level of knowledge (P= 0.029) has a dominant influence on adherence to taking anti-hypertensive drugs.

Conclusion: Patient compliance in undergoing hypertension treatment is very influential on the success of patient therapy. Gender, level of knowledge, duration of hypertension, insurance have a significant relationship with adherence to taking anti-hypertensive drugs and the level of knowledge is the most important factor affecting adherence to taking medication in hypertensive patients.

Keywords: *Adherence, Hypertension, MMAS, Factors*

OP-136

SUBACUTE TOXICITY TEST OF ETHANOL EXTRACT OF NONI FRUIT (MORINDA CITRIFOLIA L.) ON LIVER HISTOLOGY OF MALE WHITE RATS

Elidahanum Husni[1]*, Yufri Aldi[1], Fahira Annisa Fitri[1]

[1]Pharmacy Study Program, Faculty of Pharmacy, Andalas University
*Corresponding author. Email: elidahanumhusni@gmail.com

ABSTRACT

Indonesia is well-known for its herbal medicine, such as noni fruit (*Morinda citrifolia* L.), which has immunostimulant properties. This study aims to determine the safety of noni fruit by conducting a subacute toxicity test of the ethanol extract of noni fruit on liver histology. A total of 36 male white rats were used which divided into 4 groups: 1 control group and 3 test groups treated with ethanol extract of noni fruit at doses 500, 1000, and 3000 mg/kgbw orally for 7, 14, and 21 days. On the 8th, 15th, and 22nd days, 3 animals from each group were killed for liver histological examination and liver organ ratio values which were presented descriptively, and the ratio of liver organs with two-way ANOVA. Descriptive results of liver histology showed that the 3000 mg/kgbw dose group with duration of 21 days had the highest damage score, in the mild-moderate category. The results of data analysis of liver organ ratio values showed a decrease which was influenced by variations in dose ($p<0.05$). The result of Duncan's follow-up test showed significant differences in liver organ ratio values between the 500, 1000 and 3000 mg/kgbw dose groups and the control group, and there were significant differences between administration for 7, 14 and 21 days. High doses (1000-3000 mg/kgbw) of noni fruit ethanol extract can have damage to the liver's histology when taken for up to 21 days; yet, smaller doses can still be used safely for up to 14 days.

Keywords: *Ethanol extract of noni fruit, subacute toxicity, histology, liver.*

OP-137

ISOLATION OF ANTIBACTERIAL COMPOUND FROM ENDOPHYTIC FUNGUS ASPERGILLUS TERREUS JMR4

Yulia Inri[1], Friardi Ismed[1] and Dian Handayani[1]*

[1]Sumatran Biota Laboratory/Faculty of Pharmacy, University of Andalas, Padang, Indonesia.
*Corresponding author. E-mail: dianhandayani@phar.unand.ac.id

ABSTRACT

The red ginger plant is one of the hosts for the growth of endophytic fungi. Endophytic fungi are microorganisms living in plant tissues and are known to produce secondary metabolite bioactive compounds. In previous studies, an endophytic fungus, *Aspergillus terreus* JMR4, was isolated from red ginger (*Zingiber officinale* Roscoe var. Rubrum). This study aims to isolate and characterize the antibacterial compound from *Aspergillus terreus* JMR4. The fungus was cultivated on rice media for 4-6 weeks. The secondary metabolites produced by the fungus are then extracted with ethyl acetate. The extract was then fractionated using solvents of different polarities (n-hexane, dichloromethane (DCM), and methanol). The antibacterial activity assay of the three fractions was tested against three pathogenic bacteria, *Staphylococcus aureus*, *Escherichia coli*, and Methicillin-Resistant *Staphylococcus aureus* (MRSA). The results showed the DCM fraction was the potential fraction with an inhibition diameter of 17.993 ± 2.076 mm against *Staphylococcus aureus*, 17.610 ± 1.129 mm for MRSA, and 16.045 ± 1.036 mm for *Escherichia coli*, at a concentration of 5%. The antibacterial compounds of the DCM fraction were isolated by column chromatography to obtain compound 1 and compound 2. Based on data from LC-MS and compared with literature data, it was concluded that compound 1 was identical to butyrolactone I (C24H24O7), and compound 2 was thought to be a hydroxylated form of compound 1.

Keywords: *Endophytic fungi, Aspergillus terreus, butyrolactone I*

Supporting Agencies: Source of research funding by Universitas Andalas, following the Indonesian Collaborative Research (RKI) Scheme A (Host) research contract, with the number of contract 6/UN16.19/PT.01.03/KO-RKI Scheme A (Host)/2023. Fiscal year 2023.

Indexing: Pharmaceutical Biological

OP-138

ENHANCED ANTIOXIDANT EFFECT OF PEPEROMIA PELLUCIDA [L.] KUNTH EXTRACT FORMULATED IN PICKERING NANOEMULSION

Lidia[1,2]*, Tri Suciati[1], Muhamad Insanu[1], Neng Fisheri[1]

[1]School of Pharmacy, Bandung Institute of Technology, Bandung 40132, Indonesia
[2]STIFI Bhakti Pertiwi, Palembang 30129, Indonesia
*Corresponding author. Email: lidia.kopertis@gmail.com

ABSTRACT

Chinese betel (*Peperomia pellucida* [L.] Kunth) with anti-inflammatory and antioxidant activity is a candidate for wound care treatment. This research aims to develop a Pickering emulsion formulation of Chinese betel hydroethanolic extract to increase antioxidant activity. Before being formulated, the extract was characterized through plant phytochemical screening, qualitative analysis of components using LC-MS/MS, total levels of phenolic compounds and flavonoids, and antioxidant testing using the DPPH method. The extract yield was 15.95% ± 0.101. Phytochemical screening revealed alkaloids, flavonoids, tannins, saponins, quinones, monoterpenoids, sesquiterpenoids, and steroids. LCMS-MS analysis identified various phenolic contents of the extract, namely apigenin, acacetin, isovitexin, casticin, velutin, and pellucidatin. The test results for total phenol and flavonoid levels were 53.90 mg GAE/g extract and 39.99 mg QE/g extract, respectively. The extract showed moderate antioxidant activity with an IC50 value of 106.14 µg/mL. Subsequently, the extract was emulsified using a combination of homogenization and ultrasonication. The smallest globule size of 181.7 nm (IP 0.252) was produced in a formula consisting of 1% extract, 2% VCO, 3% propylene glycol, 2% glycerin, 1% Tween 80, 1% beta glucan, and 0.2% arginine. Pickering nanoemulsion showed an increase in the antioxidant activity of the extract at an IC50 value of 76.12 µg/mL, indicating strong antioxidant activity. Therefore, it is suggested the potential application of Pickering nanoemulsion of *Peperomia pellucida* extract to accelerate the natural wound healing process.

Keywords: *Peperomia pellucida, antioxidant, hydroethanolic extract, Pickering nanoemulsion.*

OP-139

THE INFLUENCE OF NON-COVALENT BONDING BETWEEN ANTIBIOTICS WITH NSAIDS (NON STEROIDAL ANTI-INFLAMMATORY DRUGS) ON THE TG-DTA (THERMO GRAVIMETRIC-DIFFERENTIAL THERMAL ANALYSIS) PROFILE

Diar Herawati[1]*, Ilma Nugrahani[1], Hidehiro Uekusa[2], Takaaki Hori[2], Marlia Singgih W[1]

[1]School of Pharmacy, Bandung Institute of Technology, Bandung, 40132, Indonesia
[2]Department of Chemistry, Tokyo Institute of Technology, Tokyo, 152-8551, Japan
* Corresponding author. Email: diarmunawar@gmail.com

ABSTRACT

This research was conducted to determine the characteristics of the thermal properties Thermal Gravimetric (TG)-Differential Thermal Analysis (DTA) of organic salt from the antibiotic compounds levofloxacin (L) and ciprofloxacin (C) with the NSAIDs niflumic acid (N), tolfenamic acid (T), flufenamic acid (F). The antibiotic compounds levofloxacin and ciprofloxacin are added to NSAID class compounds namely niflumic acid, tolfenamic acid, flufenamic acid to become a combination compound of levofloxacin-niflumic acid (LN), levofloxacin-tolfenamic acid (LT), ciproloxacin-flufenamic acid (CF), ciprofloxacin-niflumic acid (CN) all at a molar ratio of 1:1. The formation of the combination compound was carried out using the SDG (solid drop grinding) method and SE (Slow Evaporation) method which was accompanied by dissolution. Thermal fusion and decomposition were investigated using TG-DTA. The results of the analysis of measuring the characteristics of thermal properties using TG-DTA for all samples gave endhotermic peaks and the results of TG Analysis measurements experienced the lowest total mass loss of 0.74% in the CF sample and the largest mass loss in the LT sample namely 18%. As for the ciprofloxacin combination, the CF combination compound gave an exothermal peak at 62.2-194.8°C and the results of TG Analysis measurements experienced the lowest total mass loss of 0.74%. For the combination of ciprofloxacin, namely CN, it gave an exothermal peak at 190.8°C and the results of TG analysis measurements experienced the lowest total mass loss of 3.79%. Thermal conductivity indicates the formation of different non-covalent bonds in the combination of LN, LT, CF, CN.

Keywords: *Antibiotic, Non-covalent bonding, DTA, NSAID, TG*

Indexing : Pharmaco-chemistry, Pharmaceutical analysis

OP-140

EFFECT OF SONICATION ON VISCOSITY AND FLOW PROPERTIES OF LIQUID CRYSTAL COLLAGEN FROM SNAKEHEAD FISH (CHANNA STRIATA)

Intan Meisi[1], Rahmi Nofita[1], Rini Agustin[1]*

[1]Pharmacy Study Program, Faculty of Pharmacy, Andalas University
*Corresponding author. Email: riniagustin@phar.unand.ac.id

ABSTRACT

Liquid crystal systems are a state of matter between solids (crystals) and liquids that can be used as skin penetration enhancers for high molecular weight agents such as collagen, whose viscosity is influenced by ultrasonic waves. This research aims to see the effect of sonication on the viscosity and flow properties of collagen liquid crystals. The stages of the research were the examination of collagen raw materials, formation of liquid crystals, sonication treatment, and characterization. Collagen liquid crystals were formed by dispersing the isolated dry collagen into 0.5 M acetic acid and given variations of sonication treatment of 0, 1, 5, 10, 15, and 20 minutes. Mesophase analysis showed a phase change of liquid crystals at 20 min sonication time. Functional group analysis (FTIR) showed during increased sonication time the collagen liquid crystals still had a triple-helix structure, pH before freeze-thaw (3.48; 3.47; 3.46; 3.45; 3.44; 3.44 and after freeze-thaw (3.68; 3.66; 3.64; 3.62; 3.61; 3.61), viscosity before & after freeze-thaw were (45; 20; 18; 14; 11; 8) and (44.5; 19.67; 17.89; 14; 11; 8). Liquid crystals of snakehead fish collagen without sonication treatment had pseudoplastic flow but turned into dilatancy after sonication treatment. In conclusion, the sonication time of 20 min was determined as the critical sonication time where the first phase change of liquid crystals occurred. Increasing sonication time leads to a decrease in pH and viscosity and changes in the flow properties of the collagen liquid crystals.

Keywords: *Liquid crystal, collagen, snakehead fish, sonication, rheology*

See You Next Year!

Thank you for being part of our event.

Let's welcome the next hope, joy, and love.