The 3rd Bandung International Teleconference on Pharmacy 2023

ABSTRACT BOOK

Advanced of Pharmacy Research to Build a Sustainable Future For Healthcare

BANDUNG INTERNATIONAL TELECONFERENCE ON PHARMACY
BITP 2023

http://conference.farmasi.unpad.ac.id/bitp2023/

WELCOME REMARK
From Chairman of Organizing Committee
3rd Bandung International Teleconference on Pharmacy (BITP) 2023

Dear Excellencies, Colleagues, Ladies and gentlemen. I wish you a very good morning.
It is a great pleasure for me to welcome you to this virtual conference of the 3rd Bandung International Teleconference on Pharmacy (BITP) 2023. I am grateful to acknowledge invited speakers

- **Prof. dr. Irawan Satriatomo, Ph.D., BCMAS, Florida University, USA**
- **Ezatul Ezleen Kamaruzaman, Ph.D, University Sains Malaysia**
- **Dr. Felix Zulhendri, PhD, Faculty of Pharmacy, Universitas Padjadjaran**

and other participants joining us. I am wishing you and your families my personal best—for your health and safety.

This Seminar is a continuation from 1st & 2nd BITP which successfully held in 2021 & 2022. This is not only a forum for researchers, but it can also be followed by students, educators, observers, and practitioners from universities, research institutions, industry, and the general public to exchange ideas and latest information in the field of pharmaceutical science.
The theme of the conference is on **"Advanced of Pharmacy Research to Build a Sustainable Future For Healthcare"** with 3 invited speakers, 41 oral presentations, and 55 poster contributions from over 100 participants, which cover various topics in the field of pharmaceutical science, including Pharmaceutical Technology and Pharmaceutics, Pharmaceutical Analysis, Medicinal Chemistry, Pharmacology and Toxicology, Pharmaceutical Biology, Community Pharmacy, and Clinical Pharmacy.

Ladies and gentlemen,
Without the generous support provided by the Directorate of Research and Community Service of Universitas Padjadjaran, this conference would not have been possible at this scale. Many members of the organizing team worked very hard to turn our initial visions for this virtual seminar into reality. Additionally, I would like to warmly thank all the authors who, with their presentations and posters, generously contributed to the lively exchange of scientific information that is so vital to the endurance of scientific conferences of this kind.
I hope you all find this conference highly engaging and beneficial for your future venture. Your support will also make this a memorable and successful event.

Finally, let me wish you a successful virtual meeting.
Thank you.

Chairman
Apt. Holis Abdul Holik, M.Si., Ph.D.

OPENING REMARK
Dean of The Faculty of Pharamcy, Universitas Padjadjaran

First of all, I would like to convey my greetings and appreciations to all of the invited speakers especially :

- **Prof. dr. Irawan Satriatomo, Ph.D., BCMAS, Florida University, USA**
- **Ezatul Ezleen Kamaruzaman, Ph.D, University Sains Malaysia**
- **Dr. Felix Zulhendri, PhD, Faculty of Pharmacy, Universitas Padjadjaran**

Thank you for your participation in our event.

Greetings from Universitas Padjadjaran,

Ladies and gentlemen,

It is a great pleasure to welcome you to The 3rd Bandung International Teleconference on Pharmacy (BITP) 2023, this event is a continuation of the 1st & 2nd BITP organized by the International Unit, Faculty of Pharmacy, Universitas Padjadjaran.

I would like to start by wishing you and your families good health and safety. As society begins to slowly recover from the COVID-19 pandemic, it is clear that COVID-19 has reshaped the way we will live our lives for the foreseeable future. The world is facing many predicaments that require joint hands from different stakeholders involved in a wide range of actions for positive change. We also understand the importance of science, technology and innovation in this challenging situation for transforming the world.

Due to the pandemic situation, The 3rd Bandung International Teleconference on Pharmacy (BITP) 2022 will be held through a webinar. The 3rd BITP will focus on **"Advanced of Pharmacy Research to Build a Sustainable Future For Healthcare"** with many topics including Biotechnology, Natural products, pharmaceutical excipients, pharmaceutical education during covid-19 pandemic, and many other interesting topics of pharmaceutical research.

This seminar will serve as a venue for researchers, professionals and students that have interests in the area of pharmaceutical science and its related fields to build many collaborations for their own research projects and will also enrich collaborations of the activity in education, research and community service of Faculty of Pharmacy Universitas Padjadjaran.

I hope this seminar will accomplish all its aims and earnestly desire that all participants will be able to benefit from the presentations and discussions, and this seminar will enrich the development of pharmaceutical science, not only in Indonesia but also in Asia. I would like to thank the organizing committee for their tremendous efforts to make this program come to the realisation. I hope all of the speakers and participants will gain many benefits and insightful experiences. Hopefully, we will meet again in the next BITP program.

Best Regards,

Prof. Dr. Ajeng Diantini, M.Si., Apt.

STEERING COMMITTEE

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SCHEDULE OF
3rd BANDUNG INTERNATIONAL TELECONFERENCE ON PHARMACY
(3rd BITP) 2023

Topic : Advanced of Pharmacy Research to Build a Sustainable Future For Healthcare
Date : Thursday, 14th September 2023
Time : 07.30 AM – 12.40 PM (Jakarta time)

Time		Agenda
From	**To**	
07.30 AM	08.00 AM	Registration
08.00 AM	08.15 AM	Opening Ceremony
08.15 AM	08.45 AM	Poster Session (PP01 – PP39)
08.45 AM	09.35 AM	**Keynote Speaker:** Prof.dr. Irawan Satriotomo, Ph.D., BCMAS (Florida University, USA) Moderator: apt. Gofarana Wilar, M.Si., Ph.D.
09.35 AM	10.05 AM	**Invited Speaker I:** Dr. Felix Zulhendri, PhD. (Faculty of Pharmacy, Universitas Padjadjaran) Moderator: apt. Neily Zakiyah, M.Sc., Ph.D.
10.05 AM	10.35 AM	**Invited Speaker II:** Ezatul Ezleen Kamaruzaman, Ph.D. (Universiry Sains Malaysia) Moderator: Dr. apt. Rimadani Pratiwi, M.Si.
10.35 AM	10.40 AM	Announcement to Parallel Session
10.40 AM	11.55 AM	Parallel Session (8 Breakout Room)
11.55 AM	12.25 PM	Poster Session (PP40 – PP65)
12.25 PM	12.35 PM	Announcement for Best Poster and Oral Presenter
12.35 PM	12.40 PM	Closing Ceremony

TIME SCHEDULE PARALEL SESSION
(ORAL PRESENTATION)

Room 1

Time : 10.40 AM – 11.55 AM
Moderator : apt. Gofarana Wilar, M.Si., Ph.D.

Time	Code	Presenter Name	Title
10.40 – 10.55	OP13	Luthfi Utami Setyawati	ACUTE AND SUBCHRONIC TOXICITY STUDIES OF ALPHA MANGOSTIN ON SPRAGUE DAWLEY RATS
10.55 – 11.10	OP01	Dr.Apt. Hesti Riasari., M.Si	ANTI-DIABETIC ACTIVITY TEST OF SIMPLICIA SEED POWDER OF KABAU (ARCHIDENDRON BUBALINUM (JACK) I.C. NIELSEN) IN ALLOXANE INDUCED DIABETIC RATS
11.10 – 11.25	OP05	apt. Ika Kurnia Sukmawati M.Si	A REVIEW OF THE ANTIBACTERIALS OF TWO EDIBLE FUNGI AURICULARIA AURICULA JUDEI AND AURICULARIA POLYTRICA MONT: CHALLENGES AND PROSPECTS FOR FUTURE ANTIBIOTIC
11.25 – 11.40	OP06	apt.Cszahreyloren Vitamia, S.Farm., M.Si.	LOCAL HEMOSTATIC ACTIVITY OF SEVERAL VARIETIES OF BANANA (MUSA PARADISIACA, L) PSEUDO-STEM SAP IN SWISS WEBSTER MICE
11.40 – 11.55	OP12	Apt. Yulius Baki Korassa.,S.Farm.,M.Si	ANTI-ALOPECIA ACTIVITY OF MORINGA (MORINGA OLEIFERA LAMK.) SEED OIL AGAINST DIHYDROTESTOSTERONE-INDUCED RABBITS

TIME SCHEDULE PARALEL SESSION
(ORAL PRESENTATION)

Room 2

Time : 10.40 AM – 11.55 AM
Moderator : Dr. apt. Ellin Febrina, M.Si.

Time	Code	Presenter Name	Title
10.40 – 10.55	OP18	Muhammad Ryan Radix Rahardhian	ACUTE TOXICITY AND IMMUNOMODULATORY ACTIVITY OF SUNGKAI LEAF EXTRACT (Peronema canescens Jack) IN BALB/C MICE
10.55 – 11.10	OP26	Dr. apt. Niken Indriyanti, M.Si	WEIGHT LOSS ACTIVITY OF BOESENBERGIA ROTUNDA, ZINGIBER CASSUMUNAR, AND HIBISCUS SABDARIFFA COMBINATION EXTRACT ON ZEBRAFISH MODEL
11.10 – 11.25	OP27	Yedi Herdiana	CHITOSAN NANOPARTICLES FOR GASTROESOPHAGEAL REFLUX DISEASE TREATMENT
11.25 – 11.40	OP32	eris nurul rahmadhini	ORAL MUCOSAL ULCER INDUCTION METHODS IN RATS: A SYSTEMATIC REVIEW
11.40 – 11.55	OP35	Raden Bayu Indradi	ANTIPLASMODIAL ACTIVITY COMPARISON OF FOUR MEDICINAL PLANTS USED IN PAPUA ISLAND, INDONESIA

TIME SCHEDULE PARALEL SESSION
(ORAL PRESENTATION)

Room 3

Time : 10.40 AM – 11.55 AM
Moderator : Dr. apt. Tina Rostinawati, M.Si.

Time	Code	Presenter Name	Title
10.40 – 10.55	OP39	GOFARANA WILAR	IN-VIVO STUDY ALKALOID FRACTION OF MUSA PARADISIACA FA. CORNICULATA PEEL AND THE STUDY MECHANISM OF ACTION THROUGH 5-HYDROXYTRYPTAMINE
10.55 – 11.10	OP40	Dr.apt. Raden Maya Febriyanti, M.Farm.	CYTOTOXICITY ASSAYS OF EXTRACT AND FRACTIONS FROM Premna serratifolia L. LEAVES AGAINST HEK-293 CELL LINE
11.10 – 11.25	OP43	Mashuri Yusuf, S.Si., M.Farm	CYTOTOXIC ACTIVITY AND PHYTOCHEMICAL SCREENING OF ETHANOL EXTRACT OF TAMPALA (Uncaria lanosa var. ferrea (Blume) Ridsdale) BREAST CANCER CELL LINES ON MCF-7 BREAST CANCER CELL LINES
11.25 – 11.40	OP48	Titing Nurhayati	EFFECT OF MORINGA OLEIFERA LEAF POWDER ON HEMATOLOGICAL PROFILE OF MALE WISTAR RATS
11.40 – 11.55	OP53	Fitrah Utari Bakti	THE USE OF TRANEXAMIC ACID MOUTHWASH IN THE GINGIVAL BLEEDING MANAGEMENT IN APLASTIC ANEMIA PATIENT: A CASE REPORT

TIME SCHEDULE PARALEL SESSION
(ORAL PRESENTATION)

Room 4

Time : 10.40 AM – 11.55 AM
Moderator : Dr. apt. Soraya Ratnawulan Mita, M.Si.

Time	Code	Presenter Name	Title
10.40 – 10.55	OP02	Irma Erika Herawati	STANDARDIZATION AND ANTIOXIDANT ACTIVITY OF EXTRACT RUMPUT MUTIARA (Oldelandia corymbosa L.) USING DPPH METHOD (2,2-Diphenyl-1-Picrylhydrazyl)
10.55 – 11.10	OP08	La Ode Aman	IN SILICO STUDY OF THE SYNERGISTIC OF 5FU+CURCUMIN ANALOGUES AS INHIBITORS OF B-CELL LYMPHOMA 2 PROTEIN
11.10 – 11.25	OP17	Marisa Dwi Ariani	SYNTHESIS OF MOLECULARLY IMPRINTED POLYMER WITH METHACRYLIC ACID MONOMER BY BULK POLYMERIZATION FOR ISOLATION OF ETHYL P-METHOXYCINNAMATE FROM KAEMPFERIA GALANGA L. EXTRACTS
11.25 – 11.40	OP21	Vevi Maritha	UHPLC-HRMS COMBINED CHEMOMETRICS FOR HALAL AUTHENTICATION OF BEEF AND PORK
11.40 – 11.55	OP38	Wisnu Cahyo Prabowo	ANTIOXIDANT ISOLATION OF ISOELEUTHERINE AND ISOELEUTHERINE OF Eleutherine americana Merr FROM EAST KALIMANTAN

TIME SCHEDULE PARALEL SESSION
(ORAL PRESENTATION)

Room 5

Time : 10.40 AM – 11.55 AM
Moderator : Driyanti Rahayu, M.T.

Time	Code	Presenter Name	Title
10.40 – 10.55	OP41	Winasih Rachmawati	TLC VIDEO DENSITOMETRY ANALYSIS OF THIAMPHENICOL IN DRY SYRUP
10.55 – 11.10	OP44	Imam Adi Wicaksono	IN SILICO SIMULATION OF PROTEIN-PROTEIN INTERACTIONS BETWEEN TMEPAI (Transmembrane Prostate Androgen-Induced Protein) AND NEDD4L PROTEIN
11.10 – 11.25	OP47	Yusuf Ikrom Nur Azami	OPTIMIZATION OF ISOLATION CELLULOSE FROM SIWALAN FIBER (Borassus flabellifer L.) USING RESPONSE SURFACE METHODOLOGY
11.25 – 11.40	OP52	Ayu Permatasanti	ANTIOXIDANT EFFECT OF ZINC AND ALOE VERA-CONTAINING STABILIZED CHLORINE DIOXIDE MOUTHWASH FOR ORAL MANIFESTATION OF ACUTE MYELOBLASTIC LEUKEMIA (AML): A CASE REPORT AND REVIEW OF THE LITERATURE
11.40 – 11.55	OP54	Nur Masyithah Zamruddin	SYNTHESIS AND CHARACTERIZATION OF MAGNETIC MOLECULAR IMPRINTED POLYMER-SOLID PHASE EXTRACTION (MMI-SPE) FOR ANALYSIS OF MDR-TB DRUG CLOFAZIMINE IN BLOOD SAMPLES

TIME SCHEDULE PARALEL SESSION
(ORAL PRESENTATION)

Room 6

Time : 10.40 AM – 11.55 AM
Moderator : Dr. apt. Ade Zuhrotun, M.Si.

Time	Code	Presenter Name	Title
10.40 – 10.55	OP30	Fatmawati Blegur	ETHNOMEDICIN AND ANTIBACTERIAL POTENTIAL OF ETHANOL EXTRACT OF MESOCARP OF PALM FRUIT (Borassus flabellifer L.) AND ETHANOL EXTRACT OF WHITE BANYAN LEAF (Ficus benjamina L.) FROM HELONG TRIBE, KUPANG REGENCY, EAST NUSA TENGGARA, INDONESIA
10.55 – 11.10	OP33	apt.Uce Lestari, S.Farm, M.Farm	ANTIOXIDANT ACTIVITIES AND SCREENING PHYTOCHEMICAL OF EXTRACT ETHANOL LEAF SURIAN (Toona sinensis) IN VITRO
11.10 – 11.25	OP42	apt. Ika Kurnia Sukmawati M.Si	ANTIFUNGAL ACTIVITY OF BUTTON MUSHROOM (AGARICUS BISPORUS) EXTRACT AND ETHANOL FRACTION AGAINST *CANDIDA ALBICANS, ASPERGILUS FLAVUS* AND *MICROSPORUM GYPSEUM*
11.25 – 11.40	OP50	Ririn Puspadewi	ANTIBACTERIAL ACTIVITY OF ETHANOL EXTRACT AND ETHYL ACETATE FRACTION FROM PARIJOTO FRUIT AGAINST Staphylococcus aureus, Escherichia coli and Propionibacterium acnes
11.40 – 11.55	OP51	apt. Lia Mardiana, M.Farm	PHYTOCHEMICAL SCREENING AND ANTIOXIDANT ACTIVITY TEST OF LUPUN ROOT (Poikilospermum suaveolens (Blume) Merr) FROM SOUTH OF BORNEO

TIME SCHEDULE PARALEL SESSION
(ORAL PRESENTATION)

Room 7

Time : 10.40 AM – 11.55 AM
Moderator : Dr. apt. Rini Hendriani, M.Si.

Time	Code	Presenter Name	Title
10.40 – 10.55	OP03	Dea Anita Ariani Kurniasih	EFFECTIVENESS OF ELECTRONIC PRESCRIBING (E-PRESCRIBING) IN REDUCING MEDICATION ERRORS IN HOSPITALS: LITERATURE REVIEW
10.55 – 11.10	OP09	Farida Rendrayani	INTERVENTIONS TO IMPROVE PHARMACISTS' COMPETENCY IN MANAGING CHRONIC DISEASE: A PROTOCOL FOR SYSTEMATIC REVIEW
11.10 – 11.25	OP20	Astrid Widhowaty Santoso	A RARE CASE OF METHOTREXATE-INDUCED ORAL ERYTHEMA MULTIFORME
11.25 – 11.40	OP31	Dede Jihan Oktaviani	MOTHERS' KNOWLEDGE TOWARDS WOUND CARE IN THE GREATER BANDUNG AREA
11.40 – 11.55	OP46	Vesara Ardhe Gatera	ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICE TOWARDS OVERWEIGHT AND OBESITY AMONG HEALTH SCIENCES STUDENTS IN UNIKL-RCMP, IPOH, PERAK, MALAYSIA

TIME SCHEDULE PARALEL SESSION
(ORAL PRESENTATION)

Room 8

Time : 10.40 AM – 11.55 AM
Moderator : apt. Arif Budiman, M.Si., Ph.D.

Time	Code	Presenter Name	Title
10.40 – 10.55	OP07	Ira Adiyati Rum,M.Si	DETECTION OF ACNE BACTERIA Propionibacterium acne ON INTERCHANGEABLY USED MAKE UP FOUNDATION BY PCR Gel-Base METHOD
10.55 – 11.10	OP15	Angreni Ayuhastuti	NANOEMULSION FORMULATION OF COMBINATION ALPHA ARBUTIN AND KOJIC ACID DIPALMITATE AS SKIN BRIGHTENING
11.10 – 11.25	OP19	Nurul Arfiyanti Yusuf	FORMULATION AND EVALUATION OF TRANSDERMAL PATCH OF GLIBENCLAMIDE TRANSETHOSOME
11.25 – 11.40	OP34	Dr.apt.Sani Nurlaela Fitriansyah, M.Si	ANTIOXIDANT ACTIVITY AND SUN PROTECTOR FACTOR OF DIFFERENT PARTS OF SAWO WALANDA (Pouteria Campechiana (Kunth.) Baehni.)
11.40 – 11.55	OP36	Prof. Dr. apt. Dolih Gozali, MS.	DESIGN, FORMULATION, AND EVALUATION CARVEDILOL MULTICOMPONENT CRYSTAL TABLET

TIME SCHEDULE POSTER SESSION
(POSTER PRESENTATION)

Poster Session at 08.15 AM – 08.45 AM (PP01 – PP39)

No	Code	Presenter Name	Title
1	PP01	Dr.apt. Yuliet, S.Si.M.Si.	IMMUNOSTIMULANT ACTIVITY OF HANTAP (STERCULIA COCCINEA JACK) LEAVES EXTRACT ON THE SPESIFIC AND NON SPECIFIC IMMUNE RESPONSES
2	PP02	Norisca Aliza Putriana	VALIDATION OF BIOANALYTICAL METHOD FOR QUANTIFICATION OF VITAMIN K2 (MK 4) IN HUMAN PLASMA BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY ULTRAVIOLET
3	PP03	Garnadi Jafar	DEVELOPMENT OF THE FORMULA AND CHARACTERIZATION OF TRETINOIN NANOSTRUCTURED LIPID CARRIERS (NLC) USING PRECIROL® ATO5 USING THE SONIKATOR PROBE METHOD
4	PP04	Elis Susilawati	EFFECT OF ETHANOL EXTRACT OF LEAVES Erythrina subumbrans. (HASSK.) MERR. AGAINST BLOOD PRESSURE IN OBESE ANIMALS FRUCTOSE-INDUCED
5	PP05	Apt. Ani Anggriani, M. Si	COST-EFFECTIVENESS ANALYSIS OF THE USE OF COMBINATION CHEMOTHERAPY IN BREAST CANCER PATIENTS IN A HOSPITAL IN BANDUNG
6	PP08	Irma Rahmawati	PHENOLIC CONTENT OF INDONESIAN BAY LEAVES (Syzygium polyanthum) DECOCTION AND HERBAL TEA
7	PP09	apt. Yenni Puspita Tanjung, M.Farm.	LOZENGES FORMULATION OF CIPLUKAN FRUIT EXTRACT (Physalis angulata L.) WITH COMBINATION OF FILLER AGENTS AVICEL PH 102 - LUDIPRESS
8	PP10	Andi Ika Julianti Handayani	LOCAL HEMOSTATIC ACTIVITY OF KEMBANG BULAN LEAVES (Tithonia diversifolia (HEMSL.) A. Gray IN SWISS WEBSTER MICE
9	PP11	Tubagus Akmal	OPTIMIZATION OF POLYHERBAL FORMULA COMPOSITION AS ANTIOXIDANT USING SIMPLEX LATTICE DESIGN
10	PP12	Dr. apt. Ellin Febrina, M.Si	ANALYSIS INTERACTION OF POLYUNSATURATED FATTY ACID (PUFAS) FROM NAVICULA SALINICOLA

No	Code	Presenter Name	Title
			AS INHIBITOR OF BENIGN PROSTATE HYPERPLASIA: AN IN-SILICO STUDY
11	PP14	Sri Agung Fitri Kusuma	INTERACTION EFFECT OF APIS TRIGONA HONEY, ETHANOLIC EXTRACTS MURRAYA PANICULATE, SMALLANTHUS SONCHIFOLIUS AND THEIR COMBINATION AGAINST STAPHYLOCOCCUS AUREUS INFECTIONS
12	PP15	Sri Agung Fitri Kusuma	INHIBITION OF SEVERAL ENTEROBACTERIACEAE SPECIES ISOLATED FROM DRINKING WATER REFILL BY LEAF EXTRACT OF RUBBER PLANT (Ficus elastica Roxb. ex Hornem)
13	PP16	Sri Agung Fitri Kusuma	CAPTURE OF IMMUNOGLOBULIN-Y ANTI-MPT64 FROM EGG-YOLK SUPERNATANT USING THIOPHILIC ADSORPTION CHROMATOGRAPHY
14	PP18	Nela Sharon	PENGARUH GELLING AGENT HPMC PADA KARAKTERISTIK FISIK DAN POTENSI ANTIBAKTERI GEL EKSTRAK DAUN TAMOENJU (Hibiscus surattensis L) TERHADAP BAKTERI Staphylococcus aureus
15	PP19	Aris Suhardiman	ISOLATION AND IDENTIFICATION OF ANTIOXIDANT ACTIVE COMPOUNDS IN GAHARU LEAVES (Aquilaria malaccensis Lam)
16	PP20	Dr. Aiyi Asnawi, ST., M.Si	EXPLORING BINDING AFFINITIES OF ACETOACETATE IN ACRYLAMIDE-BASED POLYMERS (PAM) FOR MOLECULARLY IMPRINTED POLYMERS (MIPS): AN IN-SILICO STUDY
17	PP21	Widhya Aligita	PROTEIN-PROTEIN INTERACTION ANALYSIS TO IDENTIFY NUCLEAR FACTOR-ERYTHROID-2 FACTOR 2 (NRF2) INHIBITION BY EXTRACELLULAR ENZYMES FROM WATER KEFIR ORGANISMS
18	PP22	Dr. apt. Joni Tandi., M.Kes	ACTIVITY TEST OF JUWET LEAF ETHANOL EXTRACT ON P ANTIDIABES AND HISTOPATOLOGICAL FEATURES PANCREAS AND KIDNEY
19	PP26	Dr. apt. Ami Tjitraresmi, M.Si.	SCREENING ANTIURICEMIA POTENTIAL OF SOME INDONESIAN MEDICINAL PLANTS THROUGH XANTHIN OXIDASE INHIBITION IN VITRO ASSAY

No	Code	Presenter Name	Title
20	PP28	Angga Cipta Narsa	FORMULATION AND EVALUATION OF HAND AND BODY LOTION FROM PURPLE SWEET POTATO (IPOMOEA BATATAS L.) PEEL EXTRACT AND ITS ANTIOXIDANT ACTIVITY
21	PP29	Maria Almeida	Optimization Of Lactobacillus plantarum Fermentation For Enhanced Phenolic Production From Bark Extract Of Bajakah (Uncaria nervosa) By Response Surface Methodology
22	PP30	Holis Abd Holik	In Silico Study of 5-BOTP and ADPB as Carriers of Radiotheranostic Compounds Against LAT-1
23	PP31	Umil Mahfudin	JOURNAL OF THE POTENTIAL OF FLAVONOID COMPOUNDS IN PLANTS FOR THE TREATMENT OF PARKINSON'S
24	PP32	Diah Lia Aulifa	THE IMPACT OF PORE SIZE ON THE DRUG LOADED-MESOPOROUS SILICA
25	PP33	Nyi Mekar Saptarini	ANTI-ACNE CREAM OF PAPERY SKIN EXTRACT OF MAJA CIPANAS ONION (Allium cepa L. var. ascalonicum) AGAINST Propionibacterium acnes
26	PP34	Yuyun Nailufa	OPTIMIZATION OF KAPPA CARRAGEENAN POLYMER CONCENTRATION AND POTASSIUM CHLORIDE CROSSLINKER ON PHYSICAL CHARACTERISTICS OF GLUTATHIONE-KAPPA CARRAGEENAN NANOSPHERE
27	PP36	Resmi Mustarichie	EUCALYPTOL FROM Eucalyptus globulus Labill. AS AN ANTIHYPERTENSIVE IN COVID COMORBID
28	PP37	Sukmawati. S	POTENTIAL EXTRACT, ETHYL ACETATE AND N-HEXAN FRACTIONS FROM QUST AL HINDI (Sausserea lappa) AS ANTI-HYPERURISEMIA
29	PP38	Deden Indra Dinata	MOLECULAR DOCKING AND MOLECULAR DYNAMICS OF GOTU KOLA (Centella asiatica L.) COMPOUNDS TO TYPE 1 ANGIOTENSIN II RECEPTORS AS ANTIHYPERTENSIVES
30	PP39	Insan Sunan Kurniawansyah	MICROBIOLOGICAL EFFECTIVENESS STABILITY OF CHLORAMPHENICOL OPHTALMIC IN SITU GEL

TIME SCHEDULE POSTER SESSION
(POSTER PRESENTATION)

Poster Session at 11.50 AM – 12.25 PM (PP40 – PP65)

No	Code	Presenter Name	Title
31	PP40	Riani Tanjung, SE., M.Si., Ak., CA	COST-EFFECTIVENESS ANALYSIS OF TREATMENT IN GASTROESOPHAGEAL REFLUX DISEASE INPATIENT PATIENTS IN BANDUNG, INDONESIA
32	PP41	Nyi Mekar Saptarini	ANTI-ACNE CREAM OF LEAVES EXTRACT OF FIG (Ficus carica L.) FROM CIWIDEY DISTRICT, INDONESIA, AGAINST Propionibacterium acnes AND Staphylococcus epidermidis
33	PP42	Arif Budiman	THE IMPACT OF POLYVINYLPYRROLIDONE ON THE INHIBITION OF CRYSTAL NUCLEATION OF RITONAVIR FROM SUPERSATURATED SOLUTIONS
34	PP43	Ade Zuhrotun	TOPOISOMERASE INHIBITOR ACTIVITY OF JAMU GENDONG PAHITAN (BITTER HERB) USING MECHANISM-BASED YEAST BIOASSAY
35	PP44	Rimadani Pratiwi	COMPARISON OF PARTITION COEFFICIENT (LOG P) OF DRUGS: COMPUTATIONAL AND EXPERIMENTAL DATA STUDY
36	PP45	Intan Timur Maisyarah Ph.D.	CYTOTOXIC ACTIVITY OF EXTRACT AND FRACTIONS OF Pouteria campechiana LEAVES AGAINST MCF-7 CELL LINE
37	PP47	Holis Abd Holik	META-TYROSINE CONJUGATES LABELED 64CU AND 68GA AS A CANCER RADIODIAGNOSIS AGENT THROUGH A COMPUTATIONAL MOLECULAR STUDY ON LAT-1
38	PP48	Dr. apt. Tina Rostinawati, M.Si	OPTIMIZATION OF RECOMBINANT ANTIMICROBIAL PEPTIDE LL-37 ANTIMICROBIAL PEPTIDE PRECURSOR EXPRESSION IN ESCHERICHIA COLI BL21 (DE3)
39	PP49	Driyanti Rahayu	PREPARATION AND CHARACTERIZATION OF BIOPLASTIC WITH SORGHUM (Sorghum bicolor L.) STARCH BASED AND COMBINATION OF CHITOSAN

No	Code	Presenter Name	Title
40	PP50	Arif Budiman	PREPARATION AND CHARACTERIZATION OF AMORPHOUS SOLID DISPERSIONS FROM ALPHA-MANGOSTIN AND POLYVINYLPYRROLIDONE, AND ITS IMPACT ON THE PHARMACEUTICAL PROPERTIES
41	PP51	Arif Budiman	PREPARATION AND CHARACTERIZATION OF CO-AMORPHOUS RITONAVIR–SACCHARIN BY SOLVENT EVAPORATION
42	PP52	Dr. apt. Tina Rostinawati, M.Si	ISOLATION AND REFOLDING SCFV ANTI-HER2 FROM INSOLUBLE FRACTION AND PURIFICATION WITH NI-NTA AFFINITY CHROMATOGRAPHY
	PP53	Yusuf Supriadi	FORMULATION AND EVALUATION OF LIP GEL POMEGRANATE PEEL EXTRACT (Punica granatum L.) WITH VARIATION OF CARBOMER 940 CONCENTRATION AS GELLING AGENT
43	PP54	Insan Sunan Kurniawansyah	A COMPARATIVE STUDY ON THE THERAPEUTIC EFFECT OF pH, TEMPERATURE TRIGGERED, AND ION ACTIVATED IN SITU GELLING SYSTEM FOR OCULAR DELIVERY
44	PP55	Tita Nofianti	THE POTENCY AND FORMULATION MUCOADHESIVE GRANULES OF ETHANOL EXTRACT GREEN GRASS JELLY (PREMNA OBLONGIFOLIA MERR.) LEAVES AS PEPTIC ULCER TREATMENT AGENT
45	PP56	Richa Mardianingrum	RADIOLABELING OF CO-AM USING IODINE-131 FOR RADIOPHARMACEUTICAL OF THERANOSTICS BREAST CANCER
46	PP57	Danni Ramdhani	MOLECULAR DOCKING STUDIES OF BIOACTIVE COMPOUNDS FROM KLUTUK BANANA (MUSA BALBISIANA COLLA) WITH PROTEINS PROMOTING ANTIBIOTIC RESISTANCE IN BACTERIAL AND FUNGAL PATHOGENS
47	PP58	Danni Ramdhani	IN SILICO IDENTIFICATION OF NATURAL PRODUCTS WITH ANTITUBERCULOSIS ACTIVITY FOR THE INHIBITION OF INHA AND ETHR PROTEINS FROM MYCOBACTERIUM TUBERCULOSIS

No	Code	Presenter Name	Title
48	PP59	Yedi Herdiana	CHITOSAN-BASED NANO SYSTEMS FOR NATURAL ANTIOXIDANTS IN BREAST CANCER THERAPY
49	PP60	Kamelia Agustini	BEHAVIORAL TECHNOLOGY ACCEPTANCE MODEL IN HEALTH CARE INDUSTRY; SYSTEMATIC LITERATURE REVIEW
50	PP61	Norisca Aliza Putriana	QUALITY OF LIFE OF WARFARIN THERAPY PATIENTS USING THE DASS (DUKE ANTICOAGULATION SATISFACTION SCALE) IN DR. HASAN SADIKIN BANDUNG HOSPITAL
51	PP62	Susi Afrianti	ANTIBACTERIAL ACTIVITY TEST OF HERBAL and NON HERBAL BAR SOAP AGAINST THE GROWTH OF Staphylococcus aureus ATCC29213
52	PP63	Soraya Ratnawulan Mita	FORMULATION AND IN VIVO PERMEATION TESTS OF KETOPROFEN PATCH
53	PP64	Rini Hendriani	IN VIVO TERATOGENICITY STUDIES OF PHYSALIS ANGULATA LINN HERB ETHANOL EXTRACT
54	PP65	Gofarana Wilar	THE EFFECT OF INFORMATION SYSTEM MANAGEMENT RECIPES SERVICES ON MEDICATION ERRORS IN FIRST LINE HEALTH FACILITY IN KARAWANG DISTRICT
55	PP49	Driyanti Rahayu	PREPARATION AND CHARACTERIZATION OF BIOPLASTIC WITH SORGHUM (Sorghum bicolor L.) STARCH BASED AND COMBINATION OF CHITOSAN

INVITED SPEAKER

PHYTOMEDICINE: A POTENTIAL ALTERNATIVE THERAPEUTICS FOR NEURODEGENERATIVE DISEASES

Irawan Satriotomo

Center for Translational Research Neurodegenerative Diseases, University of Florida, USA

ABSTRACT

Phytomedicine or herbal medicine has a long history of usage outside of conventional medicine. Phytomedicine is rapidly expanding fields that include in-depth bioactive component analysis, identifying therapeutic action mechanisms and diseases prevention. Despites its expanding global popularity, little study has been conducted on the efficiency of phytotherapy, notably as an alternative treatment for neurodegenerative diseases. The author will provide a broad overview about phytomedicine as a complementary medicine alongside with modern Western medicine in this talk. The futures of plants-derived medicine are anticipated to hold tremendous promise for discovering some novel and therapeutics strategies and products. Recent studies strongly point toward their therapeutic efficacy against stroke, Alzheimer's disease, Parkinson's disease, Huntington's disease, and other diseases. Their antioxidant and anti-inflammatory properties are thought to be responsible for their neuroprotective effects, while their exact mechanism of action is yet unknown. We will also discuss the risks and benefits of phytomedicine, as well as safety and quality control or regulation. Further research is needed to highlight the functionality of our phytomedicine without compromising the quality and efficiency of the active compounds in the herbal medicine.

INVITED SPEAKER

THE DEVELOPMENT OF TOPICAL PRODUCTS FROM INDONESIAN STINGLESS BEE PROPOLIS: THERAPEUTIC AND COSMETIC APPLICATIONS

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ABSTRACT

The field of meliponiculture, which focuses on the breeding and management of stingless bees, is significantly less advanced than apiculture. Nonetheless, there has been a marked resurgence in interest in meliponiculture particularly in Indonesia. This renewed attention has brought significant economic benefits to the rural areas. Therefore, developing a wider range of products based on stingless bee propolis could further benefit the Indonesian small-scale beekeeping communities. In addition, the development of topical products derived from propolis has lagged behind those consumed orally or taken as supplements. Propolis extracts from Indonesian stingless bees possess antioxidant and anti-inflammatory properties, making it an excellent candidate for therapeutic topical applications as well as to be incorporated into skincare and cosmetic products. We investigated the hydro-glyceric extract of propolis harvested from the nests of the Indonesian native *Geniotrigona thoracica*. It was found to contain various phytochemical compounds, including polyphenols, terpenoids, saponins, alkaloids, vitamins, and minerals. This presentation explores the potential use of the hydro-glyceric extract from Indonesian stingless bee propolis. Through several case studies, we will examine its application in topical formulations designed to treat various skin conditions in humans and its potential uses in veterinary medicine.

INVITED SPEAKER

MACHINE LEARNING IN DRUG DISCOVERY: OUR JOURNEY

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ABSTRACT

According to Forbes, the main technologies currently shifting the paradigm of medical research are artificial intelligence (AI) and machine learning (ML). Both AI and ML make it possible to turn the challenge of big-data growth within the biomedical sector into an advantage. It is not surprising that application of ML already has been integrated into drug-discovery processes: 40% of drug-discovery start-ups already are exploiting AI to identify new drug candidates. One method for accomplishing this is the leveraging of computational methods to discover new candidate drugs and vaccines *in silico*. In the last decade, machine learning-based models, trained on specific biomolecules, have offered inexpensive and rapid implementation methods for the discovery of effective viral therapies. Drug discovery and development pipelines are long, complex and depend on numerous factors. Machine learning approaches provide a set of tools that can improve discovery and decision making for well- specified questions with abundant, high-quality data. Opportunities to apply ML occur in all stages of drug discovery. Thus, we would like to share our journey in utilizing ML in drug discovery processes.

OP01

ANTI-DIABETIC ACTIVITY OF KABAU SEED POWDER (*Archidendron bubalinum (Jack) I.C.Nielsen*) IN ALLOXAN-INDUCED DIABETIC RATS

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ABSTRACT

Kabau seed is one of the potential traditional medicines to reduce blood sugar levels in people with diabetes mellitus[1]. The study was to optimize the method of test dosage form kabau seed simplicia powder in alloxan-induced diabetic rat models. The Making of Kabau Seed Suspension is carried out by grinding the raw material using a grinder, followed by sieving it through meshes of 80, 120, and 200. Subsequently, the suspension is prepared through two methods. The first method involves suspending the powdered raw material with 5% CMC , while the second method involves coarsely grinding the powdered raw material and 5% CMC together, followed by adding hot water and homogenizing the mixture through strong grinding. Diabetic animal models were obtained by intraperitoneal induction of alloxan dose of 120 mg/kg BW. The study consisted of 6 groups, namely the normal group, negative control (CMC 0.5%), positive control (glibenclamide 0.45 mg/kg BW) and the simplex powder test dosage group of 250, 500, and 1000 mg/kg BW. Blood glucose levels were determined by the GOD-PAP method, and phytochemical screening and TLC tests were carried out on the test material. The data were tested statistically using One Way ANOVA with a confidence level <0.05. The powdered crude material with a particle size of 74 microns, obtained by sieving through a mesh size of 200, is utilized as the test material in the second method. An effective dose as an antidiabetic is a dose of 1000 mg/kg BW with a decrease in blood sugar levels by 100±13. The results of the phytochemical screening test showed that the simplicia powder of kabau seeds contained alkaloids, flavonoids, phenolics, monoterpenes and sesquiterpenes, steroids, quinones and saponins. In the TLC of the test material, there were three dominant spots at Rf 0.33 wich were a group of phenolic compounds after being sprayed with $FeCl_3$ (black)[2], while at Rf 0.1 and 0.72 were saponin glycoside compounds (green) after being sprayed with vanillin sulfate[3]. The test material was administered using powdered crude material with a particle size of 74 microns, employing the second method of suspension preparation. Effective dose as an antidiabetic is a dose of 1000 mg/kg BW with a decrease in blood sugar levels by 100±13.

Keywords: Kabau, Antidiabetic, GOD-PAP

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OP02

STANDARDIZATION AND ANTIOXIDANT ACTIVITY OF EXTRACT RUMPUT MUTIARA (*Oldelandia corymbosa* L.) USING DPPH (2,2-Diphenyl-1-Picrylhydrazyl) METHOD

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ABSTRACT

Rumput mutiara (*Oldelandia corymbosa* L.) belonging to the family Rubiaceae, is one of the plants that has been used as herbal medicine because it contains various secondary metabolites[1]. Flavonoid is the main component in herba rumput mutiara that can be used as antioxidant[2]. *O. corymbose* used empirically for treatment of viral infections, cancer, appendicitis, hepatitis, eye disease, and bleeding[3]. In order to *O. corymbose* can be used as raw material for standardized traditional medicines, it was necessary to determine specific and non-specific parameters, the profile of thin layer chromatography (TLC), and the potential antioxidant activity of *O. corymbose* extract using DPPH (2,2-diphenyl-1-picrylhydrazyl). The method for standardization of *O. corymbose* was based on determining specific and non-specific parameters of simplicia and extract in Farmakope Herbal Indonesia (FHI), while measurement antioxidant activity was using Uv-Vis spectrophotometry with DPPH (2,2-diphenyl-1-picrylhydrazyl) method. The results showed extract has blackish brown in color with a characteristic odor and a bitter taste. The microscopic crude drug produced fragments such as anther, mesophyll composed of parenchymal cells, lower epidermis with stomata, transport bundles, sclerenchyma, and stem parenchyma. Non-specific parameters showed that the water soluble compounds was 35%; ethanol soluble compounds 72%; moisture extract content of 12%; drying losses of extract was 18%. Specific parameters of *O. corymbose* extract contained alkaloid, polyphenol, flavonoid, tannin, saponin, steroid, and glycoside as evidenced by phytochemical screening and chromatogram patterns using different mobile phases. The results of the antioxidant activity *O. corymbose* extract test using the DPPH method, obtained the IC_{50} was 14.11 ppm. The conclusion showed that specific and non-specific parameters of *O. corymbose* extract are in accordance with the FHI and also extract *O. corymbose* has very strong antioxidant activity.

Keywords: *Oldelandia corymbosa* L., specific and non-specific parameters, antioxidant.

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OP03

EFFECTIVENESS OF ELECTRONIC PRESCRIBING IN REDUCING MEDICATION ERRORS IN HOSPITALS: LITERATURE REVIEW

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ABSTRACT

Medication error (ME) is an issue in the treatment process that can result in damage and endanger patient safety[1]. Several studies have indicated that electronic prescription improves in the reduction of prescribing errors while also improving patient safety[1]. It may prevent prescription errors while also enhancing communication between the pharmacist and the prescriber[2]. This research is a literature study that aims to analyze the effectiveness of using electronic prescriptions to reduce medication errors, which was conducted utilizing the Google Scholar, Medline, and Science Direct databases with the search terms "Electronic Prescription", "Electronic Prescribing", and "Medication Error" in May 2023. The search yielded a total of nine scientific papers discussing the potential advantages of using electronic prescription systems in hospitals. These benefits primarily revolve around mitigating issues associated with illegible prescriptions and minimizing medication errors throughout the drug preparation process. The implementation of this measure would lead to a decrease in prescribing errors, certain types of mistakes and the frequency of potential adverse drug events, hence enhancing the effectiveness of medications. In summary, hospitals that employ computerized prescription systems have observed a substantial decrease in occurrences of medication errors.

Keywords: electronic prescribing, hospitals, literature review, medication error.

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OP05

A REVIEW OF THE ANTIBACTERIALS OF TWO EDIBLE FUNGI *Auricularia auricula* judae AND *Auricularia polytrica* (Mont.): CHALLENGES AND PROSPECTS FOR FUTURE ANTIBIOTIC

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ABSTRACT

Infectious disease is a condition where microorganisms enter the body and can threaten human health. Infections can be treated with antibiotic therapy, but the use of antibiotics causes the infection to become widespread and the bacteria to become resistant[1]. Plants that have potential as antibacterials are red ear mushrooms (*Auricularia auricula*-judae) and black ear mushrooms (*A. polytricha*), which are known to have many bioactive compounds, namely polysaccharides, proteins, flavonoids, polyphenols, alkaloids, tannins and others. This review aimed to review natural sources of fungal origin for infection by bacteria. This review presents the application of several mushrooms in the management of infection. Electronic databases such as Web of Science, PubMed, Scopus, and Google Scholar were reviewed to identify the antibacterial from two edible mushrooms. Based on the literature review results, all extracts have shown strong fungal antimicrobial activity against Gram-positive bacteria compared to Gram-negative bacteria and yeast. Ethanol extract has resulted in limited antimicrobial activities of mushrooms against *E. coli* and *P. aeruginos*[2]. On the other hand, hexane extract also showed higher antimicrobial activity in *A. polytricha* (25.3± 0.47) but against *S. aureus*[3]. Based on the chemical and pharmacological characteristics of *Auricularia auricula*-judae and *A. polytricha* we concluded that these species have beneficial therapeutic properties and have the potential to be used as an effective adaptogenic herbal medicine.

Keywords: Mushroom, Antibacterial, *Auricularia auricula*-judae, *Auricularia polytricha*

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OP06

LOCAL HEMOSTATIC ACTIVITY OF SEVERAL VARIETIES OF BANANA (*MUSA PARADISIACA*, L) PSEUDO-STEM SAP IN SWISS WEBSTER MICE

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ABSTRACT

Indonesians have upheld the tradition of utilizing herbal remedies through generations, and one prominent example is the utilization of the banana tree (*Musa paradisiaca*) for its medicinal advantages[1]. In this current research, the antimicrobial, antioxidant, and anticancer characteristics of banana sap and its unrefined extracts were assessed[2]. Consequently, a study was conducted to assess the local hemostatic activity of different types of banana pseudo stem sap by measuring the bleeding time in experimental animals. The research employed the Duke method, which entailed creating a minor injury on the mice's tails and then applying the respective test materials for 10 seconds[3]. The male Swiss Webster mice were divided into five groups: the negative control group (sterile aquadest), the positive control group (Epinephrine), and three treatment groups – one treated with ambon-banana pseudo stem sap, another with jackfruit-banana pseudo stem sap, and the third with siem-banana pseudo stem sap. The mean ± SD bleeding times for the five groups were as follows: the negative control group exhibited a mean of 305.40 ± 79.45 seconds, the positive control group recorded 88.00 ± 29.45 seconds, the ambon-banana pseudo stem sap group displayed 181.20 ± 91.19 seconds, the jackfruit-banana pseudo stem sap group showed 199.20 ± 64.77 seconds, and the siem-banana pseudo stem sap group indicated 135.40 ± 31.19 seconds. The collected data underwent ANOVA statistical analysis, followed by the LSD (Least Significant Difference) test. Significantly, a distinction was observed between the negative control group and the other treatment groups among the five groups. However, there was no significant difference found among the three treatment groups involving various varieties of banana tree sap. In conclusion, the research revealed that the sap from banana pseudostems could effectively reduce bleeding time in mice.

Keywords: local hemostatic, banana pseudo-stem sap, duke method

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OP07

DETECTION OF ACNE BACTERIA *Propionibacterium acne* ON INTERCHANGEABLY USED MAKEUP FOUNDATION BY PCR Gel-Base METHOD

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ABSTRACT

The use of cosmetics interchangeably can cause microbial growth both pathogenic and non-pathogenic. The presence of microbial contamination can cause unstable cosmetic preparations and causes infections of the bacteria that cause acne on the skin, sensitivity, and other skin diseases due to direct contact with the skin. The aim of this research was to detect the presence or absence of contamination by acne-causing bacteria *Propionibacterium acnes* in foundation samples by PCR method (Polymerase Chain Reaction). This research was conducted in 4 stages: cultivation of *P. acne* bacteria using MHA (Mannitol Salt Agar) as positive control,then DNA isolation from fresh *P. acne* culture and from foundation. DNA isolation using extraction and purification DNA method,then DNA amplification using PCR method, then characterization PCR using electrophoresis gel agarose. The primers used in this research were designed using Primer3 software[1]. This research was conducted by comparing the PCR results between positive controls and foundation samples observed from electrophoresis bands[2]. PCR results showed from 5 foundation samples that have been checked, there were 4 samples that gave positive results of .*P. acne*s contamination. These results are indicated by the appearance of the same band between samples with positive controls as a comparison. The conclusion of this research is that there is contamination of *P. acnes* in 4 foundation samples detected using the PCR method.

Keywords: *Propionibacterium acne*; Acne vulgaris; Foundation; Polymerase Chain Reaction (PCR).

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OP08

IN SILICO STUDY OF THE SYNERGISTIC OF 5FU+CURCUMIN ANALOGUES AS INHIBITORS OF B-CELL LYMPHOMA 2 PROTEIN

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ABSTRACT

The dual inhibitory capability of Lapatinib targeting both EGFR and HER2 has been found to have a synergistic effect when combined with 5-fluorouracil (5-FU) in HER2-amplified esophageal carcinoma[1]. The combination of Lapatinib and 5-FU in the treatment of esophageal squamous cell carcinoma (ESCC) demonstrates significant inhibition of EGFR and HER2 phosphorylation[2]. BCL2 also serves as a target protein in cancer treatment. In breast cancer patients, BCL2 protein can become excessive, inducing tumor growth. 5-FU has been used in the treatment of various cancers, including breast cancer, and has been proven to trigger apoptosis in both wild-type p53 and mutant p53 cells, through modulation of the BCL2 family of proteins[3]. Despite its widespread use as an anticancer agent, the emergence of resistance poses a challenge to its effectiveness[3]. One solution developed to overcome 5-FU resistance is a combination drug approach. The research objective is to explore the potential synergistic inhibition of two curcumin analogs with 5-FU against the BCL2 protein. We investigate the synergistic inhibitory capability of 5-FU combined with (1E,4E)-1,5-bis(4-hydroxyphenyl)penta-1,4-dien-3-one (AC01) and (1E,4E)-1,5-bis(3,4-dihydroxyphenyl)penta-1,4-dien-3-one (AC02) against the BCL2 protein by calculating binding affinities and free binding energies. Additionally, we identify specific binding sites and binding stability. The in-silico exploration is carried out using the multiple ligand simultaneous docking (MLSD) technique using the AutoDock Vina package. The stability of interactions and free binding energies are studied by applying molecular dynamics techniques with the assistance of the Gromacs package. Free energy calculations apply MMGBSA and MMPBSA techniques. The results of the analysis show that the binding affinities of the 5FU+AC01 and 5FU+AC02 combinations are approximately -11.2 and -10.832 kcal per mol, respectively—approaching the binding affinity of the 5FU+lapatinib combination (-11.381 kcal per mol). Individually, the compounds (5FU, AC01, AC02, and Lapatinib) exhibit lower binding affinities, around -4.837, -6.98, -7.085, and -8.965 kcal per mol, respectively. Examination of the interactions during a 100 ns simulation shows that all three combinations exhibit an RMSD below 0.1 nm, indicating stability of the interactions. Free energy calculations suggest that the 5FU+AC01 combination has a higher free binding energy compared to the 5FU+AC02 and 5FU+Lapatinib combinations. In conclusion, all three combinations show binding stability. However, the 5FU+AC02 combination exhibits a stronger inhibitory capacity in interacting with the BCL2 protein. These results provide hope for further exploration of the development of AC02 as an anticancer agent, both individually and synergistically with 5-FU targeting breast cancer.

Keywords: Synergetic, 5-fluorouracil, Lapatinib, Curcumin analogue, BCL2

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OP09

INTERVENTIONS TO IMPROVE PHARMACISTS' COMPETENCY IN MANAGING CHRONIC DISEASE: A PROTOCOL FOR SYSTEMATIC REVIEW

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ABSTRACT

Since pharmacists play a crucial role in managing chronic diseases, their competency is an important consideration[1–5]. Some interventions have been developed to improve pharmacists' competency in managing chronic disease, including knowledge, attitude, and skills. However, no studies have examined the effectiveness of these interventions. A systematic review of intervention could provide evidence of effective and ineffective interventions, identify the gap between studies, and provide integrated documentation to help decision-making[6]. Therefore, we developed this protocol to systematically review the effectiveness of interventions in improving pharmacists' chronic disease management competency. This systematic review protocol has been drafted under the guidance of the Standards for Reporting Protocols of New Cochrane Intervention Reviews. The systematic search will be performed using predetermined strategies to identify relevant studies on MEDLINE, Scopus, and Cochrane databases, supplemented with a particular hand search in Google Scholar and bibliographic snowballing. During the search process, original studies were identified based on the following terms: PICO (Population – Pharmacists, pharmacy students, and pharmacy technicians; Intervention – All types of interventions utilizing randomized controlled trials (RCTs) or cluster randomized controlled trials (cluster RCTs) study designs; Comparison – No intervention, a different intervention, or "usual care"; Outcomes – Competency in managing chronic diseases: knowledge, skill, or attitude). All search results will be exported to the reference manager and checked for duplicates. Two researchers will independently perform the screening process, starting with the title and abstract. We will only include articles published in English. Two reviewers then will independently extract the following data from the included studies: the author, year of the study, setting, study design, participants, sample size, targeted care type, intervention category, intervention description, outcomes, outcomes measurement, and main findings. We will assess the risk of bias using the Revised Cochrane Risk of Bias tool for randomized trials (RoB 2) and RoB 2 for cluster-randomized trials. The data will be narratively synthesized following the guidelines for narrative synthesis in systematic reviews provided by the York Systematic Review Centre for Reviews and Disseminations (CRD). Results will be reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline.

Keywords: pharmacists; training; intervention; chronic disease; disease management

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OP12

ANTI-ALOPECIA ACTIVITY OF MORINGA (*Moringa oleifera* Lamk.) SEED OIL AGAINST DIHYDROTESTOSTERONE-INDUCED RABBITS

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ABSTRACT

Alopecia is a condition where there is hair loss or no growth of hair which can occur as a result of stress, heredity, hormonal factors or due to certain diseases such as diabetes mellitus[1,2]. This study aimed to determine the anti-alopecia activity of moringa seed oil against rabbits induced by dihydrotestosterone (DHT)[3,4]. The method used was the alopecia rabbit model according to Matias with moringa seed oil concentrations of 7.5, 10 and 12.5%, positive control (0.1% finasteride) and negative control (1% tween 80) with parameters hair length and hair weight test. *In vivo* test results showed that moringa seed oil concentrations of 7.5, 10 and 12.5% had anti-alopecia activity with average hair length of 3.4 ± 0.17, 3.9 ± 0.20 and 4.5 ± 0.28 cm respectively and average hair weight of 118 ± 23.148 ± 30.9 and 175±47.2 mg respectively. Moringa seed oil concentration of 12.5% had optimal activity for developing as anti-alopecia based on the statistical analysis value of hair length (0.125>0.05) was not significantly different while hair weight (0.00<0.05) was significantly different from the positive control of 0.1% finasteride.

Keywords: *Moringa oleifera* Lamk, antialopecia, finasteride, growth hair

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OP13

ACUTE AND SUBCHRONIC TOXICITY STUDIES OF ALPHA MANGOSTIN ON SPRAGUE DAWLEY RATS

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ABSTRACT

Alpha mangostin (AM), the major compound in mangosteen pericarp (*Garcinia mangostana* Linn.), has been extensively researched and shown to have many properties such as antioxidant, antiproliferative, and anti-inflammatory. Thus, alpha mangostin can be used as a candidate for new natural drugs. Another thing that needs to be considered in the development of a new drug is its safety profile which can be determined through toxicity tests. In this study, we used animal models to investigate the acute and subchronic ip toxicity of alpha mangostin in *Sprague Dawley* rats to generate the Lethal Dose 50 (LD_{50}) and No-Observed Adverse Effect Level (NOAEL) data. Acute toxicity test was carried out using the Up and Down method in female rats by giving a dose of alpha mangostin 100 mg/kg on the first day then observed for 14 days. Subchronic toxicity tests were carried out both on male and female rats by giving doses of 0, 25, 50, and 100 mg/kg everyday for 90 days. From acute study, we found that the dose chosen (100 mg/kg) in the study was found to be not toxic. The subchronic study showed that AM has the NOAEL for repeated dose is below 25 mg/kg. The aspartate aminotransferase (AST) level among male and female rats, but were not statistically significant when compared to the control group. The blood urea nitrogen (BUN) levels in female rats Group 2 (50 mg/kg) found to be increased significantly when compared to control group. From these results, alpha mangostin with ip administration could be considered as a toxic compound with LD_{50} 100 mg/kg and NOAEL <25 mg/kg. This new finding can be used as a new AM safety profile database. Further study to determine the safest dose for repeated ip administration of AM should be performed.

Keywords: alpha mangostin, acute toxicity, subchronic toxicity, LD_{50}, NOAEL

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OP15

NANOEMULSION FORMULATION OF COMBINATION ALPHA ARBUTIN AND KOJIC ACID DIPALMITATE AS SKIN BRIGHTENING

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ABSTRACT

Various approaches are employed to manage pigmentation issues in the fields of dermatology and cosmetics. Alpha arbutin (AR) and kojic acid dipalmitate (KAD) are skin lightening compounds that can reduce melanin content, inhibit cellular tyrosinase and prevent hyperpigmentation effects on the skin[1–3], however nanoemulsion formulations incorporating this particular compound combination are currently absent from the market. The objective of this study was to formulate AR and KAD in nanoemulsion preparations in order to achieve optimal physical stability and *in vivo* efficacy. The research began with the optimization of nanoemulsion components, characteristics and storage stability evaluation, and efficacy study *in vivo* on 35 respondents over 6 weeks, who met specific criteria and provided informed consent. This test utilized a colorimeter to measure values of ΔL, ΔE, and % effectiveness. Based on the findings, AR and KAD were successfully formulated in nanoemulsion using the following composition: 22.5% cremophor RH-40, 7.5% PEG-400, a combination of sunflower seed oil and isopropylmiristate (3:2), and 63.89% deionized water. Results from the freeze-thaw test after 6 cycles demonstrated stability of the nanoemulsion, with a particle size of 26.4±1,900 nm, PDI of 0.202±0.061, pH of 4.67±0.20, spreading capacity of 1.37±0.06 g.cm/s, and dispersion capacity of 0.006±0.0002 and stable even after 30 days of storage at 25˚C. The results of skin lightening efficacy indicated that the preparation increased skin brightness (ΔL) for 33 respondents, exhibiting 1.33 times greater effectiveness in skin brightening compared to negative controls, with an effectiveness rate of 113.41%. These outcomes strongly suggested the significant efficacy of the nanoemulsion preparation as a skin lightener ($P<0.05$).

Keywords : nanoemulsion, kojic acid dipalmitate, alpha arbutin, skin brightening

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OP17

SYNTHESIS OF MOLECULARLY IMPRINTED POLYMER WITH METHACRYLIC ACID MONOMER BY BULK POLYMERIZATION FOR ISOLATION OF ETHYL P-METHOXYCINNAMATE FROM *Kaempferia galanga* L. EXTRACTS

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ABSTRACT

Ethyl p-methoxycinnamate (EPMC) is the main component of the essential oil of *Kaempferia galanga* L., but the isolation yield of EPMC is still meager (0.50%–2.50%) with various isolation methods considering that the EPMC content in *Kaempferia galanga* L. essential oil is dominant[1,2]. MI-SPE (Molecularly Imprinted Solid Phase Extraction) is currently widely used to isolate active compounds from natural materials because of its good selectivity and high reusability[3]. This study aimed to synthesize MIP for isolate EPMC using EPMC as template, methacrylic acid (MAA) as monomer, trimethylolpropane trimethacrylate (TRIM) or ethyleneglycol dimethacrylate (EGDMA) as cross-linker, benzoyl peroxide (BPO), and hexane as porogen with bulk polymerization method. In this study, two ratio templates:monomer:cross-linker were synthesized using 1:4:20 and 1:7:20 ratio with 2 variations of cross-linker (TRIM and EDGMA). The resulted show that the MIP 2 (1:7:20 ratio and TRIM) has better then MIP 1 (1:4:20 ratio and TRIM), MIP 3 (1:4:20 and EGDMA), and MIP 4 (1:7:20 and EGDMA). The adsorption capacity of MIP 2 is about 0.081 mg/g and adsorption capacity of MIP 1, MIP 3, and MIP 4 is about 0.064 mg/g, 0.026 mg/g, and 0.025 mg/g, respectively. Lastly MIP was applied to the SPE cartridge for EPMC isolation from *Kaempferia galanga* extract and the %recovery MIP 2 EPMC on ethyl acetate extract were 68.05%±3.27% with IF of 1.35, on n-hexane extract was 65.27%±5.79% with IF of 1.32, and on ethanol extract was 82.40%±6.7% with an IF of 1.31. Therefore, this MI-SPE method can be a good choice for EPMC isolation from *Kaempferia galanga* L.

Keywords: Kaempferia galanga, ethyl p-methoxycinnamate (EPMC), molecularly imprinted polymer-solid phase extraction (MIP-SPE), bulk polymerization

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OP18

ACUTE TOXICITY AND IMMUNOMODULATORY ACTIVITY OF SUNGKAI LEAF EXTRACT (*Peronema canescens* Jack) IN BALB/C MICE

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ABSTRACT

Sungkai (*Peronema canescens*) is a traditional medicine that contains secondary metabolites such as flavonoids, alkaloids, and saponins which have anti-inflammatory, and immunomodulatory[1]. Sungkai leaves have also been studied as immunomodulatory by in silico method[2]. This study aimed to determine the value of acute toxicity (LD_{50}) and immunomodulatory activity with blood parameters. Sungkai leaf extract is used for acute toxicity for 14 days using balb/c mice with 4 groups, the control group 0.5% Na-CMC suspension, sungkai leaf extract dose of 300, 2000, and 5000 mg/kg/BB. Pharmacological screening was carried out at 0, 30, 60, and 240 minutes after administration of the sungkai leaf extract, followed by observation for 14 days. Immunomodulatory activity with blood parameters for the 10th day using 30 balb/c mice with 6 groups, where groups I, II and III as 0.5% Na-CMC suspension, Stimuno® dose of 50 mg/kg BW/day, and cyclophosphamide dose of 80 mg/kg BW/day, respectively, groups IV, V, and VI, as the sungkai leaf extract with a dose of 100, 200, and 400 mg/kg BW respectively. The results of the pharmacological screening analysis found no toxic effect, all groups had no deaths of test animals. The LD_{50} of sungkai leaf extract can be categorized in the 5-15 g/kg range (Practically Non-Toxic). The results of hematology on leukocytes, neutrophils, and lymphocytes from Sungkai leaf extract significantly increased leukocytes compared to controls. The conclusion of this study, Sungkai leaves are safe and effective based on the results of acute and immunomodulatory toxicity tests with hematological parameters.

Keywords: Sungkai (*Peronema canescens*), acute toxicity test, LD50, immunomodulatory, hematological parameters

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OP19

FORMULATION AND EVALUATION OF TRANSDERMAL PATCH OF GLIBENCLAMIDE TRANSETHOSOME

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ABSTRACT

Glibenclamide is an oral antidiabetic in hyperglycemia patients with low solubility in water and has good permeability[1]. Transethosome as a vesicular system offer high skin permeation so that it is expected to increase the solubility and permeability of glibenclamide which is difficult to dissolve[2,3]. The aim of this study was to study the physicochemical characteristics of glibenclamide transethosome patch and its effectiveness in lowering blood glucose levels. The study began with the formulation of glibenclamide transethosome patches with various combinations of HPMC and PVP K30 polymers with a ratio (90:10); (85:15); (80:20); (75:25); (70:30). The evaluation included weight uniformity, folding resistance, thickness, moisture absorption, drying shrinkage, drug content, and drug release of glibenclamide transetosome patch in vitro. In vivo effectiveness test on glibenclamide transethosomal patches using several comparison groups (negative control, oral glibenclamide administration, and transdermal in patch form). The results showed that evaluation of the glibenclamide transethosome patch showed weight uniformity of the patch is between 0,051-0,063 g and CV (Coefficient of Variation) value of less than 5%. The resulting folding resistance of the patch can withstand without tearing over 200 folds. The thickness of the glibenclamide transethosome patch is between 0,14-0,24 cm. The moisture absorption capacity of the patch is between 2,1-23,5%. The moisture content of the patch is between 4,7-7,4%. The drug content of the patch is between 6,7-12,7 g/cm2. The highest concentration of drug release after the stability test from the patch was the patch with HPMC and PVPK30 (75:25) as polymers, which was 86,1% after 480 minutes. The results of the glibenclamide transethosome patch effectiveness test showed a significant decrease in blood glucose levels ($p<0.05$) compared to the negative control group, the oral group, and the glibenclamide patch group. Based on the results of the research that has been done, it can be concluded that the glibenclamide transethosome patch showed an evaluation result that met the requirements and was stable during the stability test with a comparison of HPMC and PVP K30 (75:25) as polymers. The glibenclamide transetosome patch had the ability to significantly reduce rat blood glucose levels ($p<0.05$).

Keywords: glibenclamide, transethosome patch, HPMC, PVP K30, transdermal

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OP20

A RARE CASE OF METHOTREXATE-INDUCED ORAL ERYTHEMA MULTIFORME

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ABSTRACT

Drug-induced erythema multiform (DIEM) is an uncommon disorder and is reported in less than 10% of cases[1]. Oral lesions are characterized by encrustation on the lips, erosion, and ulceration in the oral mucosal surface. Isolated oral lesions are a rare clinical entity and can complicate the diagnosis[2]. This study aimed to report the management of a rare case of oral erythema multiforme (EM) due to methotrexate (MTX). A 28-year-old woman was consulted to the Oral Medicine Clinic with complaints of pain throughout the oral cavity accompanied by blackish encrustation on the upper and lower lip 5 days ago. She previously underwent the first cycle of chemotherapy using MTX for the treatment of gestational trophoblastic tumor. Extraoral, multiple diffuse blackish patches on the face and hemorrhagic crusts on the lips with painful erosions. Intraoral, multiple erosive and ulcerative lesions on the labial and buccal mucosa. Management involved topical 0.025% hyaluronic acid mouthwash for erosion and ulceration, compressed 0.9% NaCl for crusted lesions on the lips, and petroleum jelly for the non-crusted lesion on the lips. Complete healing of oral and lip lesions was achieved within 10 days. Pharmacological management should be tailored to each patient with careful consideration of treatment risk or benefit. In our case, the use of non-steroidal anti-inflammatory topical agents was considered successful in treating oral EM.

Keywords: Oral erythema multiforme, hypersensitivity, ulceration, hyaluronic acid, saline

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OP21

UHPLC-HRMS COMBINED CHEMOMETRICS FOR HALAL AUTHENTICATION OF BEEF AND PORK

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ABSTRACT

Meat halalness is an important part of meat authentication[1]. Beef is a meat that is often consumed but cheating often occurs where beef is replaced with pork[2]. This makes meat that should be halal become not halal, so a method is needed that is able to authenticate the halalness of beef and pork[3]. A metabolomics approach using UHPLC-HRMS (Ultra High Performance Liquid Chromatography-High Resolution Mass Spectrometry) was able to selectively detect 61 metabolites present in beef and pork. Chemometric analysis such as PCA (Principal Component Analysis), Cluster analysis, and PLS-DA are needed for halal authentication of beef and pork. PCA results showed differences in metabolite profiles between beef and pork. Cluster analysis results show that beef and pork have different characteristics. The results of PLS-DA (Partial Least Squares Discriminant Analysis) analysis revealed fifteen potential metabolites that determine the halalness of beef and pork. Untargeted metabolomics using UHPLC-HRMS combined with chemometrics can successfully authenticate halal beef and pork.

Keywords: Metabolomic, Halal, PCA, PLS-DA, Meat Authentication

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OP26

WEIGHT LOSS ACTIVITY OF *Boesenbergia rotunda*, *Zingiber cassumunar*, AND *Hibiscus sabdariffa* COMBINATION EXTRACT ON ZEBRAFISH MODEL

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ABSTRACT

Boesenbergia rotunda, *Zingiber cassumunar*, and *Hibiscus sabdariffa* are potential medicinal plants to be developed as weight loss agents[1-4]. This research aimed to determine weight loss activity of the 3 plants in combination. The model used was zebrafish wild type. The protocol was approved by the Ethics Committee of Health Research, Faculty of Pharmacy, Mulawarman University. The extraction method was decocta. The flavonoid and phenolic contents were calculated using standard methods of analysis in Indonesian Herbal Pharmacopoeia. The yield and total flavonoid/phenolic content (TFC/TPC) calculations were Boesenbergia extract 2,7% with the TFC of 49.7 mg/g; *Z. cassumunar* extract 6,5% with the TPC of 41.2 mg/g; Hibiscus extract 31.6% with the TFC of 91.2 mg/g. It forms as dry extracts, brown colour, and hygroscopic. The average weight loss of zebrafish in 2 weeks treatment was 9-16% in sample 1 group; 28,5% in sample 2 group; and no lowering body weight on sample 3 group. The sample 1 and 2 are promising compared to orlistat activity, 32% weight loss. In conclusion, the highest weight loss activity is in sample 2 which consists of a combination of Boesenbergia extract and *Z. cassumunar* extract.

Keywords: Boesenbergia extract, weight loss, *Zingiber cassumunar*

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OP27

CHITOSAN NANOPARTICLES FOR GASTROESOPHAGEAL REFLUX DISEASE TREATMENT

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ABSTRACT

Gastroesophageal Reflux Disease (GERD) is a chronic ailment that results from the backward flow of stomach acid into the esophagus, causing heartburn and acid regurgitation[1,2]. This review explores nanotechnology as a novel treatment approach for GERD. Chitosan nanoparticles (CSNPs) offer several advantages, including biocompatibility, biodegradability, and targeted drug delivery capabilities[3,4]. CSNPs have been extensively studied due to their ability to encapsulate and release medications in a controlled manner[5,6]. Different nanoparticle (NP) delivery systems, including gels, microspheres, and coatings, have been developed to enhance drug retention, drug targeting, and controlled release in the esophagus. These nanoparticles can target specific molecular pathways associated with acid regulation, esophageal tissue protection, and inflammation modulation. However, the optimization of nanoparticle formulations faces challenges, including ensuring stability, scalability, and regulatory compliance. The future may see CSNPs combined with other treatments like proton pump inhibitors (PPIs) or mucosal protectants for a synergistic therapeutic approach. Thus, CSNPs provide exciting opportunities for novel GERD treatment strategies.

Keywords: chitosan nanoparticles, gastroesophageal reflux disease, GERD treatment, nanotechnology, targeted drug delivery, esophageal tissue protection

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OP30

ETHNOMEDICINE AND ANTIBACTERIAL POTENTIAL OF ETHANOL EXTRACT OF MESOCARP OF PALM FRUIT (*Borassus flabellifer* L.) AND ETHANOL EXTRACT OF WHITE BANYAN LEAF (*Ficus benjamina* L.) FROM HELONG TRIBE, KUPANG REGENCY, EAST NUSA TENGGARA, INDONESIA

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ABSTRACT

Palm fruit (*Borassis flabellifer* L.) and white banyan leaves (*Ficus benjamina* L.) have been used extensively as medicinal plants by people in ethnic Helong, Kupang regency, East Nusa Tenggara, Indonesia. Palm fruit and white banyan leaves are believed to prevent and treat cough and fever. The purpose of this study was to analyze the traditional medicines use practices of the Helong tribe to overcome cough, tuberculosa, and determine the antibacterial activity of ethanol extract of mesocarp palm fruit and white banyan leaves against *staphylococcus* bacteria[1–3]. The method used is diffusion using cylinders. The results of phytochemical screening obtained information that the mesocarp of palm fruit and white banyan leaves contains saponins, tannins, alkaloids, and triterpenoids that can inhibit bacterial growth. Palm fruit mesocarp ethanol extract has antibacterial activity against *staphylococcus aureus* bacteria at a concentration of 25% w/v with an inhibitory zone diameter of 11.60±0,23mm, a concentration of 50% w/v with an inhibitory zone diameter of 12.30±0,23mm, a concentration of 75% w/v with an inhibitory zone diameter of 13.40±0,23mm, and a concentration of 100% w/v with an inhibitory zone diameter of 14.40±0,35 mm. Extract ethanol white banyan leaves with a concentration of 25% w/v with a diameter of 16.53 ±2,26mm, 50% w/v with a diameter of 16.33±2,20mm and 75% w/v with a diameter of 16.56 ±1,70mm. The conclusions taken are ethanol extract of mesocarp of palm fruit and ethanol extract of white banyan leaves had antibacterial activity.

Keywords: Antibacterial Activity, Ethanol Extract, Mesocarp of Palm Fruit (*Borassus flabellifer* L.), White Banyan Leaf (*Ficus Benjamina* L.), *Staphylococus* bacteria

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OP31

MOTHERS' KNOWLEDGE TOWARDS WOUND CARE IN THE GREATER BANDUNG AREA

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ABSTRACT

Proper wound care is essential to prevent complications and worsening of the injured patient[1]. Everyone in the family needs to possess wound care knowledge, especially the mother, who plays a role in making decisions about health care and family health behaviours[2,3]. This study aims to evaluate mothers' knowledge towards wound care in the Greater Bandung Area. This cross-sectional study involved 100 respondents with varied backgrounds and had met the inclusion criteria. The study was conducted in June to July 2023 using questionnaires distributed online, then data processing and analysis were carried out. The results showed that mothers in the Greater Bandung Area had a good level of knowledge (27%), average (52%), and less (21%). Based on these results, it can be concluded that most mothers already have an average level of knowledge to good. However, there are still quite a lot of mothers who have a lack of knowledge related to wound care. In addition, plasters with wound care solutions were still the mothers' main choice in wound care. Nevertheless, there are many choices of pharmaceutical dosage forms for wound care that have been developed today to optimize the wound healing process. Therefore, educational programs must be developed to raise awareness about wound care and management, as well as knowledge about pharmaceutical dosage forms for wound care.

Keywords: wound care, wound healing, wound care pharmaceutical dosage forms, mothers' knowledge

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OP32

ORAL MUCOSAL ULCER INDUCTION METHODS IN RATS: A SYSTEMATIC REVIEW

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ABSTRACT

Oral mucosal ulcers are a common lesion in the population, but the availability of oral mucosal anti-ulcer drugs is still limited[1]. Research has frequently used a variety of induction techniques to produce oral mucosal ulcer models in rats. The aim of this systematic review was to describe different approaches to rat oral mucosal ulcer induction and to suggest the most effective approach for in vivo research on oral mucosal anti-ulcer drug discovery. The PRISMA guidelines were used in the framework of this systematic review. The electronic databases PubMed, ScienceDirect, SCOPUS, and EBSCOhost-CINAHL Plus were used for article searching using specific keywords. The risk of bias was evaluated using Syrcle's Risk of Bias Tool. The analysis of 14 articles led to the following results: The most widely utilized rat breed was the wistar, which averaged 8 weeks old and weighed between 120 and 300 g. Acetic acid induction is the most commonly used induction technique when compared to the other induction techniques. The ulcers produced by acetic acid are identical to those that occur on the human oral mucosa and are readily available at a reasonable price. However, the ulcers take longer to form than those produced by biopsy punch and scapel blade induction. The outcome of this systematic review demonstrates that acetic acid induction is the most commonly used technique and can generate a good model of rat oral mucosal ulcers.

Keywords: Induction methods, Oral mucosal ulcers, In vivo study, Rat.

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OP33

ANTIOXIDANT ACTIVITIES AND SCREENING PHYTOCHEMICAL OF EXTRACT ETHANOL LEAF SURIAN (*Toona sinensis*)

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ABSTRACT

Antioxidants can be produced by the body itself in inhibiting free radicals through cell oxidation reactions, but the body is more dependent on antioxidants from outside[1]. One of them is an antioxidant that comes from nature, where its availability is abundant in nature without side effects. Surian leaves (*Tonna sinensis)* is a plant that has the potential as a source of natural antioxidants which are widely used as traditional medicines and cosmetics[2-4]. The many bioactive compounds contained in it include gallic acid, methyl gallate, kaempferol, quercetin, rutin, quercitrin, palmitic acid and linoleic acid. This study aimed to determine the antioxidant activity and phytochemical screening of the ethanol extract of *Toona sinensis* leaves[5]. The phytochemical screening was carried out using the qualitative TLC method. Testing the antioxidant activity using the DPPH method. The results showed that the ethanol extract contained polyphenolic compounds (153,10 mg/g), tannins, flavonoids (33,19 mg/g), monoterpenoids, quinones and saponins with Rf values of 0.670 (terpenoids) and Rf 0.543 (flavonoids). The antioxidant activity test of the ethanol extract of surian leaves resulted in an IC_{50} value of 12.351 ppm which is close to the IC_{50} value of the comparator vitamin C of 7.805 ppm. It can be concluded that the ethanol extract of surian leaves contains flavonoid compounds with very strong antioxidant activity.

Keywords: antioxidants, surian leaves, IC_{50}

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OP34

ANTIOXIDANT ACTIVITY AND SUN PROTECTOR FACTOR OF DIFFERENT PARTS OF SAWO WALANDA (*Pouteria Campechiana* (Kunth.) Baehni.)

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ABSTRACT

UV radiation can increase Reactive Oxygen Species (ROS) production on the skin and can cause negative effects. Sun protector and antioxidant ingredients are needed to protect the skin. Phenolic compounds and flavonoids have been used as sun protectors and as an antioxidant[1-3]. *Pouteria campechiana* is known for its high abundance of phenolic compounds. This study reported the phytochemical group, total phenol and total flavonoid content, antioxidant activity, and sun protector factor of ethanol extracts of pulp, seed, leaves, and twigs of *P. campechiana*[4]. Antioxidant activity, sun protection factor and determination of total phenol and total flavonoid content were carried out using UV-visible spectrophotometry. Crude drugs and extract of pulp, seed, twig, and leaves *P. campechiana* containing phenolic group, tannin, and flavonoid. The leaf extract had the highest total phenolic content, while the highest total flavonoid content was in the seed extract. All of the extracts tested had very strong antioxidant activity indicated by the Antioxidant Activity Index (AAI) to DPPH. At a concentration of 1000 µg/mL, leaf extract demonstrated the highest sun protection by SPF value. In conclusion, the leaves extract had the potential to further as a natural antioxidant, and sun protector.

Keywords: Sawo walanda, antioxidant, sun protector factor

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OP35

ANTIPLASMODIAL ACTIVITY COMPARISON OF FOUR MEDICINAL PLANTS USED IN PAPUA ISLAND, INDONESIA

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ABSTRACT

Malaria is still persisted to be the most severe parasitic disease globally. Resistance to antimalarial agents become a threat to malaria eradication effort worldwide, with partial resistance to artemisinin detected in South East Asia and Africa region[1]. To overcome this problem, traditional medicine used by local people in endemic area might be a valuable source for potential novel antimalarial agents. Here we explore the antiplasmodial activity of medicinal plants used by local Papua Island people in Indonesia to combat malaria. Four medicinal plants, which are aerial part of *Andrographis paniculata*, *Alstonia scholaris* cortex, *Carica papaya* leaf, and aerial part of *Physalis angulata*, were collected from Buahdua, Sumedang. The plants were dried by liquid nitrogen and grounded into powder with mortar and pestle, and further extracted with 50% methanol by ultrasonic-assisted extraction method for 30 minutes, triplicate. The solvent was then removed using a rotary evaporator and freeze drying to obtain the dry powder extract. Extracts were then subjected into *in vitro* antiplasmodial testing with lactate dehydrogenase (LDH) assay. The result revealed that *P. angulata* was the only active extract with IC_{50} of 17 µg/ml while other extracts gave the IC_{50} value >50 µg/ml which was considered as inactive. This result indicates that *P. angulata* showed potential antiplasmodial activity compared to other plants and could be subjected into further study to reveal the potential active antiplasmodial agents.

Keywords: antiplasmodial, medicinal plants, *Physalis angulata*.

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OP36

DESIGN, FORMULATION, AND EVALUATION CARVEDILOL MULTICOMPONENT CRYSTAL TABLET

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ABSTRACT

Carvedilol belongs to BCS (Biopharmaceutical Classification System) class II which has poor solubility with a bioavailability value of 25-30%, has poor compressibility, and poor flow properties[1,2]. Multicomponent crystal technique can improve physicochemical properties in terms of solubility, dissolution, compressibility, tabletility and to cover the lack and limitations of other techniques. The purpose of this study was to find the best coformer in increasing solubility, dissolution, and flow properties and to compare the dissolution profile with the comparator product[3]. The tablet manufacturing method used was direct compression using a formula designed by a design expert using the active ingredient of CVD-Urea 1:1 multicomponent crystal drug prepared by solvent evaporation technique and confirmed by PXRD, DSC, and FTIR. Multicomponent crystals (CVD-Urea 1:1) gave increased solubility and dissolution, the percent dissolution obtained for 60 minutes was 100.68±0.77%. Multicomponent crystal tablets (CVD-Urea 1:1) obtained better flow properties than pure carvedilol, and F6 have a dissolution profile similar to that of the comparator product at pH 1.2 and 4.5 with f2 values of 65.89 and 61.30, respectively. The multicomponent crystal technique has succeeded in improving the flow properties, solubility, and dissolution. Among all tablet formulations, F6 and F8 had better disintegration time and dissolution rate and gave a better dissolution profile than comparator products at pH 1.2 and 4.5.

Keywords: Carvedilol, Solvent Evaporation, Solubility, Dissolution, Simplex Lattice Design, Tablet, Comparative Dissolution

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OP38

ANTIOXIDANT ISOLATION OF ISOELEUTHERINE AND ISOELEUTHERINE OF *Eleutherine americana* Merr FROM EAST KALIMANTAN

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ABSTRACT

Eleutherine Americana Merr bulbs is a plant that is commonly found in Kalimantan, Indonesia. Hereditary is often used by the community as a traditional medicine. The strength of the drug is strongly influenced from the content of its compounds. activity parameters showing the strength of the drug is its antioxidant activity[1]. The objective of the study was to obtain the antioxidant active compound of *E.Americana*. Maceration and fractionation using methanol and ethyl acetate solvents.The separation of the extract was followed by vacuum chromatography, conventional column chromatography, radial chromatography and preparative TLC[2.] Separation was performed based on DPPH free radical inhibition activity by spraying on TLC [3–5.] Isolates are active in the analysis using NMR. Obtained isoeleuterol and isoeleuterine compounds which have DPPH free radical inhibition activity. *Americana* bulbs is known to contain many quinones and naphthalenes, potential as an antioxidant, antimicrobial, anti-inflammatory, antidiabetic, antiviral and anticancer.

Keywords: *Eleutherine Americana* Merr, antioxidant, isoeleuterol, isoeleuterine

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OP39

IN-VIVO STUDY OF ALKALOID FRACTION OF *MUSA PARADISIACA* FA. *CORNICULATA* PEEL AND THE STUDY MECHANISM OF ACTION THROUGH 5-HYDROXYTRYPTAMINE

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ABSTRACT

Depression is a mental disorder that generates persistent sadness and loss of interest and affects a person's quality of life. The peel of horn banana contains (5-hydroxytryptamine) serotonin as a prominent neurotransmitter for antidepressant treatments[1]. We investigate the activity of horn banana as an antidepressant by drying the peel of horn banana in an oven at 50°C, then processing it into powder. The maceration of the sample was performed with ethanol as a solvent for 2x24 hours. The extract was fractionated by the liquid-liquid extraction method. After that, on the water fraction was added sodium hydroxide 5N and sample was fractionated for twice with ethyl acetate, crude of the fraction was obtained 1.2%. *In-vivo* study was performed by using two doses of ethyl acetate and were compared to normal, negative, and positive groups. The behavior test was carried out using Wheel Running Test (WRT), Forced Swimming Test (FST), Tail Suspension Test (TST), and Sucrose Preference Test (SPT) methods[2]. After that, the data was analyzed using ANOVA statistical methods. The Ethyl acetate alkaloid fraction of Musa *paradisiaca* fa. *Corniculata* Peel increases the mobility of mice on FST and TST task, and increases the consumption of sucrose on SPT behavior test. Taken together, the alkaloid fraction of horn banana peel with the dose 3.6 mg/Kg is the most effective fraction for treating depression by improving the antidepressant related behaviors by serotonin supply.

Keywords: antidepressant, behavioral test, serotonin, horn banana peel fraction.

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OP40

CYTOTOXICITY ASSAYS OF EXTRACT AND FRACTIONS FROM *Premna serratifolia* L. LEAVES AGAINST HEK-293 CELL LINE

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ABSTRACT

Bebuas (Premna serratifolia Linn) is widely distributed in tropical Asia and has been traditionally used by the community in Kalimantan for various medicinal purposes notably to treat neuralgia, headache, fever, and cough[1,2]. However, studies on its pharmacological activity and safety are still limited. As an initial step in the exploration of the pharmacological properties of *P. serratifolia*, we evaluated the quality of extract as well as cytotoxicity of extract and fractions against human embryonic kidney cell line (HEK-293). Evaluation results on specific parameters show that dried leaves of *P. serratifolia* L. have characteristic odor and bitter taste and microscopically have trichome and stomata fragments. As for the extract, specific parameter evaluation shows the following results : water soluble content 8.6%±0.002, ethanol soluble content 9.4%±0,002, and identification using TLC show Rf values 0.56; 0.62; 0.66; 0.72; 0.76; 0.82. While for nonspecific parameters, the results show 8.0% of water content; 10.78% loss on drying, and 7.72% of total ash content. Cytotoxicity assay using WST-8 revealed that *P. serratifolia* L. extract, n-hexane fraction, ethyl acetate fraction, and water fraction have IC_{50} values of 76.598; 87.464; 29.966; 221.152 µg/mL against HEK-293 respectively. The water fraction is considered to be safe against the human embryonic kidney cell line (HEK-293). The TLC pattern of the water fraction shows Rf values of 0.38; 0.54; and 0.78 and shows positive identification for flavonoids.

Keywords: extract quality parameter, specific parameter identification, cytotoxicity, HEK-293

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OP41

TLC VIDEO DENSITOMETRY ANALYSIS OF THIAMPHENICOL IN DRY SYRUP

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ABSTRACT

Video densitometry is a densitometric quantitative analysis method with an electronic optical scanning principle. Thin-layer chromatography (TLC) can produce fast data retrieval and simultaneous design of simple instruments, increasing sensitivity and compatibility with data analysis. This method is simple, inexpensive, and fast for quantitation of spots on a TLC plate[1-3]. This research aimed to obtain an analytical method for the determination of thiamphenicol in dry syrup. For this purpose, a TLC video densitometry has been developed and validated. The determination of these substances was performed in several stages, including optimization of TLC conditions, capturing TLC spots by the camera, density analysis of spots by ImageJ, analytical method validation, and thiamphenicol assay in dry syrup. Separation was performed using a silica gel GF254 plate in a vertical chamber with ethyl acetate:chloroform:methanol (7.5:2:0.5, v/v/v) as a mobile phase. The detection was carried out under a UV lamp at 254 nm and then captured using a digital camera, Sony Alpha A5100 with ISO 100 sensitivity, 50 mm focal point, f/6 aperture, and 1/15 sec shutter speed. The captured images were analyzed using ImageJ software to determine the AUC values of each spot. Analytical method validation was conducted on the selectivity test higher than 1.5. Method validation results obtained the regression equation y = 1.7481x + 16498 (r = 0.9995; Vx0 = 0.80%). The limit of detection (LoD) and the limit of quantitation (LoQ) were 21.78 and 72.60 ppm respectively. The precision (%RSD) intra-day and inter-day precisions were 1.07 and 1.34% respectively. Accuracy was conducted using a sample simulation to obtain the percent recovery. The percent recovery for the simulation samples ranged from 96.62 - 100.91%. Thiamphenicol content was determined in three dry syrup products and it varied from 99.26%, 101.25%, and 101.81% respectively. The TLC video densitometry method can be used as an alternative method for thiamphenicol analysis.

Keywords: dry syrup, thiamphenicol, TLC video densitometry

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OP42

ANTIFUNGAL ACTIVITY OF BUTTON MUSHROOM (AGARICUS BISPORUS) EXTRACT AND ETHANOL FRACTION AGAINST *CANDIDA ALBICANS*, *ASPERGILUS FLAVUS* AND *MICROSPORUM GYPSEUM*

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ABSTRACT

Infection is a condition where the entry of microorganisms into the body and multiply or microorganisms move and spread through direct contact. Resistance is the main cause of the failure of therapy[1]. Alternative antifungal therapy is needed. Button mushroom (*Agaricus bisporus*) is a food ingredient that contains secondary metabolites such as alkaloids, steroidal flavonoids, and phenolics, which have antifungal activity[2]. The purpose of this study was to determine the antifungal activity of the extract and fraction of button mushrooms against *Candida albicans*, *Aspergillus flavus*, and *Microsporum gypsum* by knowing the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC). Antifungal testing using disc diffusion method, microdilution with a comparison of ketoconazole and bioautographic testing. The antifungal activity was tested using the solution of extract, n-hexane fraction, ethyl acetate fraction, methanol: water fraction, and ketoconazole. MIC was determined by measuring the diameter of the inhibition zone on disc diffusion while in microdilution, observing the turbidity or clarity compared to the control. Button mushrooms have antifungal activity against *C. albicans* with the best results in the ethyl acetate fraction at MBC 6.250 ug/mL and MBC > 50.000 ug/mL, *A. flavus* with the best results in the methanol: water fraction with MIC values 6250 and MBC > 50.000 ug/mL, *M. gypseum* with the best results at ethyl acetate fraction with MIC of 3.125 ug/mL and MBC of 50.000 ug/mL. The study showed the best antifungal activity of button mushrooms in the ethyl acetate fraction against *M. gypseum*. The results of bioautographic testing estimated the class of steroid compounds that could inhibit fungal growth. The conclusion of *A. bisporus* has antifungal activity against *C. albicans*, *A. flavus* and *M. gypseum*

Keywords: Mushroom, Antifungal, *Agaricus bisporus*, Microdilution

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OP43

CYTOTOXIC ACTIVITY AND PHYTOCHEMICAL SCREENING OF ETHANOL EXTRACT OF TAMPALA (*Uncaria lanosa* var. ferrea (Blume) Ridsdale) BREAST CANCER CELL LINES ON MCF-7 BREAST CANCER CELL LINES

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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]. 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 was that bajakah tampala stem extract has cytotoxic activity with a moderately active category.

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

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OP44

IN SILICO SIMULATION OF PROTEIN-PROTEIN INTERACTIONS BETWEEN TMEPAI (TRANSMEMBRANE PROSTATE ANDROGEN-INDUCED PROTEIN) AND NEDD4L PROTEIN

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ABSTRACT

Transmembrane Androgen Induced-Protein (TMEPAI) is one of the proteins involved in cellular signalling pathways Epidermal Growth Factor (EGF) has been widely studied as a target for cancer therapy[1]. The interaction between TMEPAI and NEDD4L in EGF signalling plays a role in the regulation of the AKT signalling pathway[1,2]. The TMEPAI isoform-a protein has been known to be involved in the regulation of the AKT signalling pathway which is an important pathway in the regulation of cell growth, proliferation, and survival[3]. Therefore, Coarse-Grained Molecular Dynamic (CGMD) simulation to refinement and validation TMEPAI isoform-a predicted structure simulated with a membrane system, protein-protein docking analysis using HADDOCK to perform interaction between TMEPAI with human NEDD4L. The CGMD results showed that the protein conformations based on RMSD and RMSF analyses tend to be stable starting at frame 7.5 µs to 30 µs during simulation. The interaction between TMEPAI isoform-a and NEDD4L mostly occurred on the active site area. This research can be concluded that the TMEPAI structure with the membrane system has more stable and better results based on MD trajectories parameter. The interaction occurs on the active site area of TMEPAI (2nd PY motif) with strong interactions on WW3 and WW4 domains of human NEDD4L.

Keywords: Cancer, TMEPAI Isoform a, EGF, NEDD4L, Coarse Grained, Docking, Web Server

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OP46

ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICE TOWARDS OVERWEIGHT AND OBESITY AMONG HEALTH SCIENCES STUDENTS IN UNIKL-RCMP, IPOH, PERAK, MALAYSIA

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ABSTRACT

Malaysia has been listed as the first place in ASEAN countries that has a higher case of overweight and obesity compared to the others[1]. The overweight and obesity, and its risk factors are very important as the obesity rates, especially in Malaysia, are getting to rise nowadays, leading to a rising mortality rate[2]. This research aims to assess the correlation between knowledge, attitude, and practice towards overweight and obesity among pharmacy and health sciences students in UniKL RCMP, Ipoh Perak, Malaysia. A total of 260 diploma and degree students aged 18 to 25 years old participated in this survey using simple random sampling. The data were analyzed using Statistical Package of Social Sciences (SPSS) with Pearson Correlation test to find the specific answers to our objectives. Majority (58.2%) were in age group of 21-23. Regarding BMI, majority respondents showed normal BMI with 65.1% followed by 15.3% were overweight. The data collected shows a few significant findings where the more than half of respondents have good knowledge and moderate attitude but poor practice. From this study, most of the respondents have a good knowledge and satisfactory attitude levels towards overweight and obesity but lack appropriate practices. Future interventions should be integrated to educate the general population regarding healthy lifestyle and eating behaviors to reduce overweight and obesity and its complications.

Keywords: Attitude, Knowledge, Obesity, Overweight, Practice, Students

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OP47

OPTIMIZATION OF ISOLATION CELLULOSE FROM SIWALAN FIBER (*Borassus flabellifer* L.) USING RESPONSE SURFACE METHODOLOGY

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ABSTRACT

Siwalan fibers (*Borassus flabellifer* L.) are one of the natural cellulose sources in Indonesia whose potential has not been optimally utilized. This study investigated the optimum processing conditions for obtaining the maximum yield of alpha cellulose (α-cellulose) powder from siwalan fibers[1] (SF) by use of response surface methodology (RSM)[2]. Central composite design (CCD) was used to evaluate the optimum process conditions for producing cellulose obtained from SF. The factors investigated for getting the optimum conditions were temperature (40 – 80°C) and time (30 – 60 min) bleaching process using sodium hypochlorite (NaOCl). Characterization of the optimized extracted cellulose fibers includes the analysis of the resulting cellulose spectra using FT-IR spectroscopy, water content, pH, wax content, lignin, hemicellulose, cellulose content and yield[3]. Initial hypothesis was that the concentration of NaOCl and time of the bleaching process had a very significant effect on all observed variables. Initial hypothesis the best treatment for the production of cellulose was obtained with a concentration of 10% NaOCl and a bleaching time of 60 minutes, the tests carried out showed that the isolate had a pH of 6.8 and a moisture content of 7.34%. FTIR showed absorption at 3323.34 cm^{-1} for O-H, 2893.22 cm^{-1} for C-H, 1371.38 cm^{-1} for C-O-H, and 1157.28 cm^{-1} for C-O, which revealed that the values are the typical cellulose peaks. The results showed that cellulose isolated from siwalan fibers has numerous similarities with the standard synthetic cellulose used, water content 8.17± 0.03, pH 7.21 ± 0.05, wax content 0.22%, lignin 4.88%, hemicellulose nil %, cellulose content 81.86%. Additionally, a large cellulose yield of 12.3% (w/w) was obtained from the siwalan fibers, hence further development is needed. The conclusion obtained is that the level of alpha cellulose siwalan is high so that it has the potential to be used as microcrystalline cellulose.

Keywords: alpha cellulose, siwalan fiber, bleaching, Sodium Hypochlorite, Response surface methodology

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OP48

EFFECT OF *MORINGA OLEIFERA* LEAF POWDER ON HEMATOLOGICAL PROFILE OF MALE WISTAR RATS

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ABSTRACT

Moringa oleifera is one plant that almost all of its parts have been used as nutritional supplements and traditional medicines[1,2]. Moringa leaves contain nutrients, antioxidants, and bioactive substances that have anti-inflammatory, wound healing, and anti-anemia properties[3,4]. This study aimed to investigate the hematological effect of moringa leaf powder in male Wistar rats under normal conditions. Twenty-four male rats strain Wistar (*Rattus norvegicus*) 9−10 weeks old and 250−275 grams were divided into four groups (n=6), normal as a control group and three other groups were given moringa leaf powder at doses 200 mg/kgBW, 400 mg/kgBW, and 800 mg/kgBW during 12 weeks. Blood samples at week 12 were administered to determine blood count. The results of this study showed differences between the various doses of Moringa leaf powder for each hematological profile. These differences were more significant for MCH parameters that indicated a decrease in the D800 group compared with the control group. In conclusion, the consumption of moringa leaf powder for 12 weeks did not have a significant change in the hematological profile, except for the MCH value which revealed a modification.

Keywords: *Moringa oleifera*, hematological profile, Wistar rats, normal conditions

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OP49

EFFICACY OF CHLORINE DIOXIDE ON ORAL LESIONS IN ACUTE MYELOBLASTIC LEUKEMIA PATIENTS UNDERGOING CHEMOTHERAPY: A CASE REPORT

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ABSTRACT

Acute myeloblastic leukemia (AML) is a malignant blood disease characterized by the uncontrolled growth of undifferentiated blood cells. Patients may develop various oral problems, such as swollen lips, oral ulcerations, or gingival enlargement. These conditions require careful management to support the patient's recovery[1]. Chlorine dioxide is an antimicrobial and anti-inflammatory agent widely used to prevent plaque formation and malodour. However, the efficacy of this agent in treating oral lesions is still limited. This case report aims to describe the pharmacological management of oral lesions, particularly using chlorine dioxide agents in an AML patient undergoing chemotherapy. A 9-year-old girl was referred from the Department of Paediatrics at Hasan Sadikin Hospital to the Department of Oral Medicine with complaints of swelling on the upper and lower lips, difficulty while eating, swallowing, and even opening the mouth. Extra oral examinations showed the angioedema on the lips with prominent serosanguinolent crust. Intraoral examination revealed white plaques that could not be scraped off in all parts of the mouth. The patient was diagnosed with AML and had received chemotherapy until the second cycle. Gauze soaked in chlorine dioxide oral rinse was applied to compress the patient's lips. Following this, 0.2% hyaluronic acid gel was also administered. In terms of intraoral treatment, chlorine dioxide was also applied by spraying it throughout the entire mouth. After one month, the lesion had completely healed, allowing the patient to open their mouth without any issues. It concluded that chlorine dioxide significantly improves the oral mucosal lesions in an AML patient undergoing chemotherapy.

Keywords: AML, leukemia, chlorine dioxide, oral lesions

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OP50

ANTIBACTERIAL ACTIVITY OF ETHANOL EXTRACT AND ETHYL ACETATE FRACTION FROM PARIJOTO FRUIT AGAINST *Staphylococcus aureus, Escherichia coli* AND *Propionibacterium acnes*

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ABSTRACT

Parijoto plants grow a lot around Mount Muria, Kudus Regency. This plant is used by many people to treat infectious diseases caused by microbes[1]. Parijoto fruit is known to contain active compounds, including alkaloids, flavonoids, polyphenols, quinones, saponins, and tannins[2]. The study was conducted to see the activity of Parijoto fruit extract against *Staphylococcus aureus, Escherichia coli* and *Propionibacterium acnes.* The research was conducted with the following stages, i.e collection of plant materials and determination, extraction, fractionation, organoleptic checking, total ash content, acid insoluble ash content, and water content, testing the antibacterial activity of extracts and fractions by agar diffusion method. Determination of antibacterial activity showed that the ethanol extract and ethyl acetate fraction had the ability to inhibit the three test bacteria. Parijoto fruit ethanol extract has a concentration of 1.25; 1.0; 0.75 and 0.5% produced inhibition diameter against *S. aureus* 14.033±0.057; 12,600 ± 0; 10,900 ± 0.057 and 9.600 ± 0 mm. Parijoto fruit ethanol extract has a concentration of 1.25; 1.0; 0.75 and 0.5% produced inhibition diameters against *E. coli*, respectively 15.066 ± 0.288; 13.333 ± 0.404; 12.666 ± 0.057 and 11.100 ± 0 mm. The ethyl acetate fraction of parijoto fruit has a concentration of 1.25; 1.0; 0.75 and 0.5% produced inhibition diameter against *S. aureus* 15.966 ± 0.115; 13.066 ± 0.115; 11.066 ± 0.115 and 10.266 ±0.404 mm. The ethyl acetate fraction of parijoto fruit has a concentration of 1.25; 1.0; 0.75 and 0.5% produced inhibition diameters against *E. coli*, respectively 16.166 ± 0.115; 15.066 ± 0.0577; 13.966 ± 0.115 and 11.433 ± 0.057 mm. The ethyl acetate fraction of parijoto fruit has a concentration of 1.25; 1.0; 0.75 and 0.5% produced inhibitory diameters against *P. acnes* respectively 14.589 ± 0.406 ; 13.455 ± 0.134; 11.650 ± 0.307 and 7.578 ± 0.325 mm.

Keywords: parijoto fruit, ethanol extract, ethyl acetate fraction, *Staphylococcus aureus, Escherichia coli, Propionibacterium acnes*

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OP51

PHYTOCHEMICAL SCREENING AND ANTIOXIDANT ACTIVITY TEST OF LUPUN ROOT (*Poikilospermum suaveolens* (Blume) Merr) FROM SOUTH OF BORNEO

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ABSTRACT

Lupun root is the local name for *Poikilospermum suaveolens* 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[1,2]. This research aimed at evaluating the secondary metabolites as well as 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[3]. 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 IC_{50} 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[4]. These findings suggest that this plant holds the potential to be developed into a pharmaceutical product.

Keywords: Lupun Root; *Poikilospermum suaveolens*; Phytochemical screening; Antioxidant.

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OP52

ANTIOXIDANT EFFECT OF ZINC AND ALOE VERA-CONTAINING STABILIZED CHLORINE DIOXIDE MOUTHWASH FOR ORAL MANIFESTATION OF ACUTE MYELOBLASTIC LEUKEMIA (AML): A CASE REPORT AND REVIEW OF THE LITERATURE

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ABSTRACT

Acute Myeloblastic Leukemia (AML) is a hematological malignancy commonly found in children[1]. The oral manifestation of AML is usually associated with bleeding due to pancytopenia[2]. Cheilitis with bleeding followed by severe hemorrhagic crust formations on the lips is one of the manifestations that can sometimes be found and become secondary lesions of the cracked lips[2]. Antioxidant mouthwashes can be given to help accelerate the healing of lesions[3], in addition to the management of systemic conditions. This paper aims to present a case report regarding the successful treatment using zinc and aloe vera-containing stabilized chlorine dioxide as an antioxidant mouthwash in a patient with AML and its literature review. A 9-year-old boy was referred to the hospital's oral medicine division because of the hemorrhagic crust of his lips with difficulty eating and opening his mouth. He was already diagnosed with AML about 7 days ago. The results of the extra-oral examination showed severe hemorrhagic crust and erythema erosions on the upper and lower lips. The intra-oral examination could not be evaluated in detail, but the active bleeding was seen. Hematology investigation showed pancytopenia with low erythrocyte levels, and very low hemoglobin, hematocrit, leukocytes, and platelets. Patients received PRC (packed red cell) and TC (thrombocyte concentrate) blood transfusions, as well as mouthwash containing Zinc and Aloe Vera-containing Stabilized Chlorine Dioxide, for compressing the lips, every 1-2 hours with a duration of 30 minutes. Significant improvement in lip lesions was gained in a short time after blood transfusions and regular use of the mouthwash compresses. Zinc and aloe vera-containing stabilized chlorine dioxide can accelerate the healing process in AML patients estimated due to its antioxidant effects.

Keywords: antioxidant, Zinc acetate, Stabilized Chlorine Dioxide, hemorrhagic crusting, Acute Myeloblastic Leukemia

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OP53

THE USE OF TRANEXAMIC ACID MOUTHWASH IN THE GINGIVAL BLEEDING MANAGEMENT IN APLASTIC ANEMIA PATIENT: A CASE REPORT

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ABSTRACT

Gingival bleeding is one of the clinical features due to pancytopenia which is often found in patients with aplastic anemia. Tranexamic acid is an antifibrinolytic agent used to treat bleeding by blocking the binding site of lysine to plasminogen, thereby reducing the local degradation of fibrin by plasmin.[1-3] This case report aims to describe the role of using tranexamic acid mouthwash in the management of gingival bleeding in patients with aplastic anemia. A 21-year-old male patient came with the chief complaint of gum bleeding in the anterior mandible which was difficult to stop. Complaints experienced from 2 weeks ago accompanied by fever. The patient was a referral from the Department of Internal Medicine. Extra-oral examination revealed a hematoma on the lip. Intra-oral examination found spontaneous bleeding on the mandibular anterior gingiva and hematoma on the labial and lateral mucosa of the tongue. Laboratory examination results showed hemoglobin, hematocrit, erythrocytes, leukocytes, and platelets below the normal range. The results of the bone marrow morphology examination confirmed the diagnosis of aplastic anemia. Treatment included: blood transfusion of 39 flasks for 14 days, instructions for compressing the gingival bleeding area using tranexamic acid mouthwash, applying vaseline album to the lips, as well as instructions for maintaining oral hygiene. Gingival bleeding and hematoma resolved within 8 days. Tranexamic acid mouthwash has an important role in the successful comprehensive management of gingival bleeding due to pancytopenia in aplastic anemia patients.

Keywords: Aplastic anemia, tranexamic acid, gingival bleeding, pancytopenia

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OP54

SYNTHESIS AND CHARACTERIZATION OF MAGNETIC MOLECULAR IMPRINTED POLYMER-SOLID PHASE EXTRACTION (MMI-SPE) FOR ANALYSIS OF MDR-TB DRUG CLOFAZIMINE IN BLOOD SAMPLES

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ABSTRACT

Clofazimine (CLF) is a non-first-line drug for multidrug-resistant tuberculosis (MDR-TB)[1]. CLF has a half-life of 70 days and is suboptimal[2]. CLF has a half-life of 70 days and suboptimal levels 2, so therapeutic drug monitoring (TDM) is necessary. CLF levels in serum are low, so it requires a sensitive analytical method to measure. Molecularly magnetically imprinted polymers (MMIPs) have high selectivity in sample pre-treatment, and allow quick and easy isolation of target analytes[3]. The purpose of this study was to synthesize MIP sorbents for CLF analysis using MMIP technology in the presence of magnets. The stages of this research include computational selection of functional monomers and crosslinkers, determination of association constants and jobsplots, synthesis of CLF polymer MMI-SPE, extracting templates from polymers, and determining the adsorption ability, capacity, and selectivity of the polymer. The first step before doing the synthesis is to conduct a computational study using the Hyperchem 8.0.7 application to select the best functional monomer and crosslinker to be used in the MMIP synthesis stage. The results of the computational selection of functional monomers and crosslinkers showed that 3 functional monomers were selected in the mol ratio 1:4, namely Methyl methacrylate (MMA), itaconic acid (ITA), and acrylamide (AAM) with the lowest ΔE values of -29.969 kcal/mol, -24.835 kcal/mol and -21.460 kcal/mol, and 2 crosslinkers were selected in the mol ratio 1:1 trimethylolpropane trimethacrylate (TRIM) with the highest ΔE values of and -3.463 kcal/mol. The results of this computation will be continued for the determination of association constants the value in isopropanol is 813.854, Job's Plot rasio is 1:4:20 and the synthesized MMIP-APTES, MMIP-oleic acid and MIP produced yields of 2.10% 4.93% and 0.77% respectively. Characteristic tests carried out FT-IR, PSA and SEM-EDS tests showed that the synthesis was successfully carried out with a spherical and uniform agglomeration of particles, also a flat surface with many holes with a particle size of MMIP-APTES, MMIP-OA and MIP respectively 0.144 µm, 0.288 µm, and 0.133 µm. The conclusion of this research is that MIP and MMIP with the CLF template were successfully synthesized with adsorption ability of MMIP-APTES, MMIP-OA and MIP in chloroform solvent reached 100%, 70.26% and 96.47%, respectively.

Keywords: Clofazimine, MDR-TB, Magnetic Molecularly Imprinted Polymer (MMIP);

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PP01

IMMUNOSTIMULANT ACTIVITY OF HANTAP (*Sterculia coccinea* Jack) LEAVES EXTRACT ON THE SPESIFIC AND NON SPECIFIC IMMUNE RESPONSES

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ABSTRACT

Immunostimulants are compounds capable of stimulating the immune system against certain diseases and infections by increasing the activity of non-specific and specific components of the humoral and cellular immune system[1]. Natural products from plants are often used to improve immune response[2]. People have historically used hantap (*Sterculia coccinea* Jack) leaf to treat various ailments[3]. However, there needs to be more scientific research regarding the immunomodulatory properties of these plants. This study aims to determine the effect of immunostimulant and effective dose of ethanol extract of hantap leaves against non-specific and specific immune responses. The immunostimulating activity of the extract was tested by carbon clearance method (non-specific response), antibody titer test (humoral specific response), and delayed-type hypersensitivity reaction/DTH (cellular specific response)[4], total leukocytes, and differential leukocytes[5]. The effect of the extract on the delay-type hypersensitivity (DTH) response was determined by the paw edema method; the number of leukocyte cells and the percentage of leukocyte cell types were also calculated. The antibody titer test was carried out by the hemagglutination method. The results of the non-specific immune response showed that three doses of hantap leaves extract could increase the rate of carbon elimination and phagocytosis index when compared to the negative control. Hantap leaf extract can provide an immunomodulatory effect by increasing the delayed-type hypersensitivity response by showing a greater volume of leg swelling than the negative control CMC Na 0.5%, which was significantly different ($p < 0.05$), increasing primary and secondary antibody titers and increasing leukocyte count and leukocyte differential. The effective dose of hantap leaves extract was 200 mg/kgBW. This study proves that hantap leaf extract has an immunomodulatory effect that increases the immune system (immunostimulant).

Keywords: Immunostimulat, carbon clearance, leukocytes, delayed-type hypersensitivity, antibody titer

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PP02

VALIDATION OF BIOANALYTICAL METHOD FOR QUANTIFICATION OF VITAMIN K2 (MK-4) IN HUMAN PLASMA BY HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY-ULTRAVIOLET

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ABSTRACT

Vitamin K can reduce warfarin's anticoagulant action, causing a variance in response among individuals taking warfarin[1-3]. Vitamin K comes in two forms, namely Vitamin K1 (phylloquinone) and K2 (menaquinones)[1]. Menaquinone-4 (MK-4) is a kind of Vitamin K2 found in meat and dairy products[4,5]. Analysis of MK-4 levels in human plasma is very useful for patients who receive warfarin therapy[6]. High-performance liquid chromatography (HPLC) can be used for warfarin's bioanalysis, and it must be validated[6]. The purpose of this study was to validate the bioanalytical method for quantification of Vitamin K2 (MK-4) in human plasma according to the 2019 European Medicines Agency (EMA) guideline. Vitamin K2 (MK-4) was extracted using acetonitrile. HPLC with an ultraviolet detector at 245 nm, using a T3 column set at 30 C and an isocratic mobile phase containing methanol: phosphate buffer (95:5) at pH 3, a flow rate of 1 mL/min was used in this study. The warfarin concentration of 0.5–3 µg/mL was used. About 5.50%–17.42% and 6.18%–8.74%, respectively, were the average ranges of percentage coefficient of variation and percentage difference. There was no response at the analyte's retention time in the six blank plasmas and at the analyte's retention time in the blank after the injection of upper limit of quantification, indicating that the procedure was very selective and did not result in any carryover. This bioanalytical method fulfills the parameters of selectivity, accuracy, precision, and carryover based on the 2019 EMA guidelines.

Keywords: Bioanalytical method, validation, Vitamin K2 (MK-4)

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PP03

DEVELOPMENT OF THE FORMULA AND CHARACTERIZATION OF TRETINOIN NANOSTRUCTURED LIPID CARRIERS (NLC) USING PRECIROL®ATO5 USING THE SONIKATOR PROBE METHOD

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ABSTRACT

Introduction: The most widely used vitamin A derivative for mild to severe acne is tretinoin. However, it is lipophilic (LogP 6.3). Tretinoin has to be transformed into liquid lipids and nanostructured lipid carriers (NLC) based on Precirol®ATO5 and stabilized by surfactants in order to address permeability and stability concerns. **Method:** Heat homogenization and sonication with a sonicator probe were used to formulate tretinoin into NLC. Myritol®, Tego®care, and Precirol®ATO5 were the materials utilized. Particle size, polydispersity index, zeta potential, adsorption effectiveness, and morphological measurements were then used to describe NLC. **Results:** The results of the characterization revealed that NLC tretinoin has an average particle size of 300 nm for 2 measurements over a period of 30 days, a polydispersity index value of 0.5, a zeta potential range of 42.8 to 58.3 mV, and an efficiency entrapment value of >80% for all formulas. and a spherical shape emerged from the morphology data. **Conclusion:** The findings demonstrate that tretinoin's nanostructured lipid carriers provide favorable characterization outcomes.

Keywords: Tretinoin, Precirol®ATO5, NLC

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PP04

EFFECT OF ETHANOL EXTRACT OF LEAVES *Erythrina subumbrans.* (HASSK.) MERR. AGAINST BLOOD PRESSURE IN OBESE ANIMALS FRUCTOSE-INDUCED

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ABSTRACT

The ingestion of fructose in excessive amounts has been found to be associated with an elevation in symptoms related to metabolic syndrome, including hypertension. The objective of this study was to investigate the potential of the ethanol extract derived from spare dadap leaves in reducing blood pressure levels. The study employed the CODA® instrument to assess blood pressure levels in a sample of 24 rats. The rats were divided into six distinct groups: the normal group, the negative group (exposed to a fructose concentration of 60%), the positive group (administered Orlistat at a dosage of 10.8 mg per kilogram of body weight), and three groups treated with varying dosages of *Erythrina subumbrans* extract (100, 200, and 400 mg per kilogram of body weight). The parameters that are assessed are the systolic and diastolic blood pressure values. The findings of the study indicate that the administration of a 60% fructose solution over a period of 60 days resulted in an elevation in blood pressure. Conversely, the administration of dosages of EES at 100, 200, and 400 demonstrated the ability to reduce blood pressure levels. The study's findings indicate that EES demonstrated a significant drop in blood pressure among white rats that were stimulated with a 60% fructose diet.

Keywords: blood pressure, CODA®, *Erythrina subumbrans*. (Hassk.) Merr, fructose

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PP05

COST-EFFECTIVENESS ANALYSIS OF THE USE OF COMBINATION CHEMOTHERAPY IN BREAST CANCER PATIENTS IN A HOSPITAL IN BANDUNG

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ABSTRACT

Breast cancer is a malignant cancer that originates from metastatic breast tissue. The management of chemotherapy for breast cancer requires a large amount of money. Thisstudy aims to determine which drug therapy is more effective in terms of cost and effectiveness in breast cancer patients at a Bandung city hospital. This study is an observational study with a cross-sectional design. Data collection was carried out retrospectively on secondary data from medical records. The results showed that chemotherapy regimens in breast cancer patients were Paclitaxel + Carboplatin, *Fonkopac*®+Carboplatin and Docetaxel + Carboplatin with ACER values sequentiallyof IDR1.544.019,-/decrease in 1 pain scale, IDR1.660.469,-/decrease in 1 pain scale and IDR1.812.630,-/decrease of 1 pain scale. The ICER value of the Paclitaxel+Carboplatin regimen against the *Fonkopac*®+Carboplatin regimen was -1.914.550. The ICER value of the Paclitaxel+Carboplatin regimen to the Docetaxel+Carboplatin regimen was 112.350. In conclusion, the most cost-effective chemotherapy regimen was paclitaxel+Carboplatin compared to the other two regimens

Keywords: cost effectiveness, breast cancer, chemotherapy regimen.

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PP08

PHENOLIC CONTENT OF INDONESIAN BAY LEAVES (*Syzygium polyanthum*) DECOCTION AND HERBAL TEA

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ABSTRACT

The Indonesian bay leaf (*Syzygium polyanthum*) are one of the traditional cooking spices used in several countries in Southeast Asia, and this spice gives a distinctive herbaceous aroma. Bay leaves are often used as a medicinal plant for generations by the community to reduce cholesterol, diabetes, hypertension, gastritis, and diarrhea. The purpose of this study was to compare the content of polyphenols in Indonesian bay leaf decoction and bay leaf tea. The total phenolic content was determined by Folin-Ciocalteu's method. The test results showed that the highest polyphenol content was found in bay leaf tea at 19.19 mg/kg, and then bay leaf decoction at 6.36 mg/kg. Based on the statistical analysis, it was stated that there was a difference in the levels of polyphenols in each sample, meaning that there was a significant difference. *The implications of this study can be to develop processing techniques for* Indonesian bay leaf *which contain the best polyphenols for public consumption.*

Keywords: phenolic content, bay leaf decoction, bay leaf tea, Folin-Ciocalteu's method

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PP09

LOZENGES FORMULATION OF CIPLUKAN FRUIT EXTRACT (*Physalis angulata* L.) WITH COMBINATION OF FILLER AGENTS AVICEL PH 102 - LUDIPRESS

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ABSTRACT

Ciplukan fruit extract is recommended as an antioxidant supplement because it has strong antioxidant potentia. Its use in traditional medicine is considered less practical and less acceptable, so it is modified in the form of lozenges. This research aims to determine the effect of variations concentration of filler agents Avicel PH 102-Ludipress on the evaluation results of granules and tablets and to determine the antioxidant activity of ciplukan fruit extract lozenges. The extract was obtained by the soxhletation method using ethanol 96%. The lozenges were made by direct compression, and the formula was divided into 3 concentration variations of Avicel PH 102 and Ludipress, namely F1 (1:2), F2 (1:1), and F3 (2:1). The results of the research showed that the F1 formula (1:2) was the optimum ciplukan fruit extract lozenge. The results of statistical analysis using the One Way Anova test formulation of ciplukan fruit extract lozenges with variations in concentrations of Avicel PH 102 and Ludipress had a significant effect ($p < 0.05$) on moisture content, angle of repose, compressibility, thickness, friability, and dissolution time, but no significant effect ($p > 0.05$) on flow time, diameter, weight uniformity, and hardness. The best formula of ciplukan fruit extract lozenges (F1) has an IC_{50} value of 28.46 ppm and is a very strong antioxidant.

Keywords: ciplukan fruit extract, lozenges, avicel PH 102, ludipress, antioxidant

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PP10

LOCAL HEMOSTATIC ACTIVITY OF KEMBANG BULAN LEAVES (*Tithonia diversifolia* (HEMSL.) A. Gray IN SWISS WEBSTER MICE

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ABSTRACT

Herbal Medicine is still the main choice in both developed and developing countries. One of the plants for herbal medicine is kembang bulan leaves (*Tithonia diversifolia* (HEMSL.) A. Gray.) that contain secondary metabolite compounds in the form of flavonoids and tannins as local haemostatic. This experiment was conducted using the duke method to determine bleeding time in test animals. The experimental animals used were mice male Swiss Webster strain which were divided into 5 groups, which were negative control group (aquadest), positive control group (*epinephrine*), treatment group 1 (2%), treatment group 2 (4%), treatment group 3 (6%), the test animals were treated by cutting the tail 2-3mm. The results of the study from the five groups had a mean value of bleeding time as follows: Negative control group is 164.80 ± 67.98 seconds, Positive treatment group is 52.60 ± 36.43 seconds, treatment group 1 is 94.40 ± 23.41 seconds, treatment group 2 is 71.80 ± 25.02 seconds, treatment group 3 is 26.20 ± 11.38 seconds. Hemostatic activity of various concentrations of kembang bulan (*Tithonia diversifolia* (HEMSL.) A. Gray.) leaves infusa obtained significant results ($p<0.05$) between the treatment groups compared to the negative control group and the optimum concentration of kembang bulan (*Tithonia diversifolia* (HEMSL.) A. Gray.) leaves infusa as a hemostatic is at a concentration of 6%.

Keywords : Kembang Bulan leaves (*Tithonia diversifolia* (HEMSL.) A. Gray.), Hemostatic, *Bleeding Time*

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PP11

OPTIMIZATION OF POLYHERBAL FORMULA COMPOSITION AS ANTIOXIDANT USING SIMPLEX LATTICE DESIGN

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ABSTRACT

The concept of polyherbal formulation (PHF) is impressive in the therapeutic system. PHF is made up of different plants' active ingredients that are highly effective at treating disease, have low adverse effects, are affordable, convenient, and environmentally friendly. The objective of this research was to optimize PHF from *Clitoria ternatae* (L)., *Piper retrofractum* (Vahl.), and *Rosemarinus officinalis* (L.) as antioxidants using Simplex Lattice Design (SLD). Various ratios of Butterfly Pea Flower Extract (X_1), Java Long Pepper Extract (X_2), and Rosemary Herb Extract (X_3) were used to prepare PHF. Total phenolic content (Y_1) and 2′2-diphenyl-l-picrylhydrazyl (DPPH) radical scavenging activity (Y_2) were examined as responses. The experimental findings are getting closer to the outcomes of the prediction based on the experimental data for all test parameters. The results showed that the optimum composition of PHF was 21,444% Butterfly Pea Flower Extract, 21,015% Java Long Pepper Extract, and 57,541% Rosemary Herb Extract to obtain 115.959 mg GAE/g dry samples total phenolic contents and 47,943ppm (IC_{50}) DPPH radical scavenging activity. It can be concluded that the optimum composition polyherbal formula using Simplex Lattice Design is obtained that has very strong antioxidant properties.

Keywords: Polyherbal formula, Simplex lattice design, Antioxidant, Optimization

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PP12

ANALYSIS OF POLYUNSATURATED FATTY ACIDS (PUFAS) INTERACTION FROM *NAVICULA SALINICOLA* AS AN INHIBITOR OF BENIGN PROSTATE HYPERPLASIA: AN *IN-SILICO* STUDY

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ABSTRACT

Benign Prostate Hyperplasia (BPH) is a prevalent non-cancerous condition affecting aging men worldwide[1]. In the pursuit of alternative therapeutic options, polyunsaturated fatty acids (PUFAs) have emerged as potential candidates due to their diverse health benefits[2]. This study aimed to explore the interaction of PUFAs from *Navicula salinicola* with the macromolecule associated with BPH, represented by the PDB ID 6NJS, using molecular docking simulations. Molecular docking simulations using Autodock 4.2[3] were performed to assess the binding affinities of PUFAs to the active site of 6NJS. The calculated binding energies and inhibition constants provided valuable insights into the potential of PUFAs as BPH inhibitors. The results indicated that γ-linolenic acid demonstrated a strong binding affinity, forming hydrogen bonds with ARG609 and engaging in hydrophobic interactions with VAL637 and PRO639. This highlights γ-linolenic acid's potential as an inhibitor of BPH. Additionally, docosahexaenoic acid displayed favorable interactions with ARG609 and hydrophobic residues, suggesting its potential therapeutic relevance in BPH treatment. In conclusion, this molecular docking study provides valuable information on the molecular interactions between PUFAs from *Navicula salinicola* and the macromolecule 6NJS. The findings underscore the potential of PUFAs as inhibitors of BPH and pave the way for future research, leading to the development of personalized and effective therapeutic strategies for BPH management.

Keywords: Polyunsaturated Fatty Acids (PUFAs), Benign Prostate Hyperplasia (BPH), Molecular Docking, *Navicula salinicola*, Interaction

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PP14

INTERACTION EFFECT OF APIS TRIGONA HONEY, ETHANOLIC EXTRACTS MURRAYA PANICULATE, SMALLANTHUS SONCHIFOLIUS AND THEIR COMBINATION AGAINST STAPHYLOCOCCUS AUREUS INFECTIONS

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ABSTRACT

Combinations of multi-antimicrobial medication are considered to encourage a significant decrease in the minimum inhibitory concentrations of antibiotics for bacterial strains[1]. Therefore, the antibacterial interaction of *Murraya paniculate* extract, *Smallanthus sonchifolius* extract**,** Apis trigona Honey, and their combinations for their interaction effect against *Staphylococcus aureus* ATCC 29213 was investigated in this study using the agar well diffusion assay, comparing to Clindamycin phosphate. Among all, *S. sonchifolius* extract provided the most effective inhibitory activity in higher inhibition than Clindamycin phosphate with the range minimum inhibitory concentration (MIC) value of 12.5-25% w/v. However, significant different interactions (synergistic, additive and antagonistic) were observed between honey and plant crude extracts. The *S. sonchifolius* displayed additive interaction with *M. paniculate* extract but antagonistic with *A. trigona* Honey. The antagonistic interaction also produced when *M. paniculate* extract combined with *A. trigona* Honey. Consequently, their total combination of all tested sample produced an additive interaction. Thus, we concluded that their combination was ineffective to be used as the antibacterial cocktails against *S. aureus* infections.

Keywords: *Murraya paniculate, Smallanthus sonchifolius,* Apis trigona, interaction, additive, antagonistic, *Staphylococcus aureus.*

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PP15

INHIBITION OF SEVERAL ENTEROBACTERIACEAE SPECIES ISOLATED FROM DRINKING WATER REFILL BY LEAF EXTRACT OF RUBBER PLANT (*Ficus elastica* Roxb. ex Hornem)

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ABSTRACT

Antibacterial resistance in pathogenic bacteria and contaminated water are contributing to the spreading of infectious diseases. As a result, isolation and antimicrobial susceptibility testing for drinking water samples are becoming increasingly important in addressing the human health hazards associated with ingesting contaminated water. This study aimed to identify enterobacteria strains in drinking water refill obtained from 20 refill water stations in Jatinangor, West Java, Indonesia and investigated the potential antibacterial activity of rubber plant (*Ficus elastica* Roxb. ex Hornem) leaf extracts on identified strains of the isolated enterobacteria. Bacterial isolation was accomplished using membrane filtration method and the identification was performed by observing the cell and colonies morphologies, biochemical testing approach and concluded using the computer program Global Infectious Diseases and Epidemiology Network (GIDEON). The antimicrobial susceptibility test was carried out using the Kirby-Bauer diffusion technique. From 20 water samples, we found four strains of Enterobacteriaceae, as follows: *Citrobacter freundii* (nine samples), *Salmonella typhi* (six samples), *Serratia marescens* (six samples) and *Escherichia coli* (nine samples) with percentage species homology of GIDEON: 91%, 87%, 94% and 93%, respectively. The extract can inhibit all enterobacteria isolates, however, among those strains, *E. coli* was the most susceptible enterobacteria to be inhibited by rubber plants leaf extract. The current study suggests that these plants might be used to produce novel antibacterial agents against enterobacteria strains as gastrointestinal tract pathogenic microbes.

Keywords: Enterobacteriaceae, drinking water refill, *Ficus elastica* Roxb. ex Hornem, isolation, antibacterial.

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PP16

CAPTURE OF IMMUNOGLOBULIN-Y ANTI-MPT64 FROM EGG-YOLK SUPERNATANT USING THIOPHILIC ADSORPTION CHROMATOGRAPHY

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ABSTRACT

The significance of immunoglobulin Y (IgY) as a particular antibody equal to mammalian IgG is well understood. However, due to a lack of reliable purification procedures, producing highly pure IgY remains problematic[1]. In this study, we aimed to optimize the recovery of pure IgY anti-MPT64 using thiophilic adsorption chromatography. The purification of IgY anti-MPT64 was achieved by initial PEG lipid precipitation, then an optimized purification by varying the gradient concentration of elution buffer into five steps gradient (0-20%, 20-40%, 40-60%, 60-80%, and 80-100%) for three injection coloumn volume (CV) each and two steps gradient (0-50% and 50-100%) in eight CV for each concentration. The obtained IgY was characterized by SDS-PAGE and dot-blot then determined its content levels using the Lowry method. The results showed that the five steps gradient purification found to provide better purity level of IgY than the two steps gradient. However, the IgY content obtained in the two steps gradient purification (2.2632± 0.011 mg/mL) was higher than the five steps gradient purification (1.35482 ± 0.023 mg/mL). But, both purified IgY results can specifically recognize MPT64 protein through a dot blot test. Therefore, it can be summarized that thiophilic adsorption chromatography with five steps gradient of purification was an efficient process to obtain higher purity of IgY anti-MPT64, especially to be targeted as diagnostic kit component for MPT64 detection.

Keywords: immunoglobulin Y, thiophilic, MPT64, gradient step, purity.

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PP18

EFFECT OF HYDROXYPROPYL METHYL CELLULOSE (HPMC) AS GELLING AGENT ON PHYSICAL CHARACTERISTICS AND ANTIBACTERIAL POTENTIAL OF TAMOENJU (*Hibiscus surattensis* L) LEAF EXTRACT GEL AGAINST *Staphylococcus aureus*

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ABSTRACT

Tamoenju leaf is one of the plants used by Indonesian people, especially in Palu, Central Sulawesi for traditional medicine. The results of previous studies showed that the ethanol extract of tamoenju leaves contains phenolic and flavonoid compounds which have antibacterial potential[1]. The purpose of this study to formulate tamoenju ethanol extract into a gel with various HPMC concentrations, to find out the physical characteristics including organoleptic tests, pH, viscosity, spreadability, adhesion and antibacterial potential against Staphylococcus aureus bacteria. The extract was obtained by maceration method using 96% ethanol and ethanol extract gel formula of tamoenju leaves using various HPMC concentrations knows as 0.5% (F1), 1% (F2) and 1.5% (F3). The results of the organoleptic test for three formulas showed a blackish green color with a thick texture. The addition of tamoenju leaf extract to the gel base affected the base pH from pH around 7 to 4.4-4.5[2] and increased viscosity of gel[3]. The spreadability test of F2 and F3 met the standard, namely 5-7 cm[4]. The adhesion test of the three formulas met the standard for more than 4 seconds[2]. The inhibition test of the bacterial gel against Staphylococcus aureus for the three formulas had an inhibitory activity ranging from 10-11 mm in the strong category[5]. All formulas complete test parameters but F2 showed the best formula.

Keywords: tamoenju leaves (*Hibiscus surattensis* L), HPMC, physical characteristics, antibacterial.

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PP19

ISOLATION AND IDENTIFICATION OF ANTIOXIDANT ACTIVE COMPOUNDS IN GAHARU LEAVES (*Aquilaria malaccensis* Lam)

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ABSTRACT

Degenerative diseases associated with changes in people's lifestyles result in free radicals being formed in the body. Efforts to prevent or reduce the risk caused by free radicals, namely with antioxidants. Because antioxidants can neutralize free radicals, they can stabilize free radicals and make them not reactive. The Gaharu leaf plant is a plant that has antioxidant activity. The purpose of this study was to isolate active compounds from gaharu leaves that have antioxidant activity. The research method started with the extraction of gaharu leaves (*Aquilaria malaccensis* Lam) maceration method, fractionation by liquid-liquid extraction, isolation by vacuum liquid chromatography and gravity column chromatography, and purity test by single and two-dimensional development thin layer chromatography. Identification of isolates using a Uv-Vis spectrophotometer and FTIR then testing the antioxidant activity with the DPPH method. The results showed that extracts and fractions of gaharu leaves had strong and very strong antioxidant activity, and pure isolate obtained from the gravity column chromatography sub-fraction had antioxidant activity. The isolated compound is thought to belong to the phenol group marked with black spots after being sprayed with 10% FeCl3 for phenol and yellow spots with a purple background after being sprayed with 0.2% DPPH. The isolate has a maximum wavelength of 288 nm and groups O-H, C-H, and C=O. In conclusion, the active antioxidant compounds from gaharu leaves belong to the phenol group

Keywords: Antioxidant, Extract, Fraction, Isolate, *Aquilaria malaccensis*

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PP20

EXPLORING BINDING AFFINITIES OF ACETOACETATE IN ACRYLAMIDE-BASED POLYMERS (PAM) FOR MOLECULARLY IMPRINTED POLYMERS (MIPS): AN *IN-SILICO* STUDY

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ABSTRACT

Molecularly Imprinted Polymers (MIPs) have garnered significant attention as promising materials for selective recognition of target molecules[1]. Acetoacetate plays a significant role in diabetes, specifically in the context of Type 1 diabetes and diabetic ketoacidosis (DKA)[2]. Monitoring acetoacetate levels is crucial in managing diabetes and detecting potentially life-threatening complications like DKA. To gain insights into Acetoacetate-polymer interactions and identify suitable MIP candidates, we conducted a molecular docking study using AutoDock Vina[3]. Five different acrylamide-based polymers, designated as PAM1, PAM2, PAM3, PAM4, and PAM5, were selected for investigation. The binding affinities, expressed in kcal/mol, along with the number of hydrogen bonds and hydrophobic interactions formed during the complexation, were analyzed. Among the studied polymers, PAM2 exhibited the highest binding affinity with Acetoacetate, recording an impressive value of -2.738 kcal/mol. The formation of five hydrogen bonds in the PAM2-Acetoacetate complex suggests a strong and specific interaction, making PAM2 a promising candidate for MIPs targeting Acetoacetate. PAM1, PAM3, and PAM5 also demonstrated notable binding affinities, recording values of -2.012 kcal/mol, -2.248 kcal/mol, and -2.490 kcal/mol, respectively. The presence of multiple hydrogen bonds in PAM1 and PAM5 (2 and 4 hydrogen bonds, respectively) further supports their potential as MIP candidates. However, PAM4 displayed a relatively weaker binding affinity with Acetoacetate, recording a value of -1.534 kcal/mol, and did not form any hydrogen bonds or hydrophobic interactions. Consequently, PAM4 may not be an ideal choice for Acetoacetate-specific MIP applications. In conclusion, our molecular docking study sheds light on the interactions between acetoacetate and acrylamide-based polymers (PAM) for MIPs applications. PAM2 emerges as a promising candidate with the highest binding affinity and multiple hydrogen bonds with acetoacetate. The findings provide valuable insights for the rational design and development of acetoacetate-specific MIPs.

Keywords: Acetoacetate, Acrylamide-based Polymers, MIPs, Molecular Docking

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PP21

PROTEIN-PROTEIN INTERACTION ANALYSIS TO IDENTIFY NUCLEAR FACTOR-ERYTHROID-2 FACTOR 2 (NRF2) INHIBITION BY EXTRACELLULAR ENZYMES FROM WATER KEFIR ORGANISMS

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ABSTRACT

Water kefir has been shown to activate Nrf2 under hyperglycemic conditions in the kidneys of diabetic rats[1]. On the other side, microorganisms immersed in kefir grain are responsible for the synthesis of extracellular components[2]. But there is limited research on the potential of extracellular enzymes from water kefir organisms to inhibit Nrf2. The study aimed to investigate the interactions between twelve extracellular enzymes in the active site of Nrf2. The Z score[3] analysis revealed enzymes with high scores, indicating strong and statistically significant interactions with Nrf2. DNase 1, α-amylase, and lecithinase C exhibited notably high Z scores, suggesting potential key players in modulating Nrf2-mediated signaling pathways. The examination of salt bridges showed enzymes with more ionic interactions, suggesting enhanced stability and potential for strong binding within the active site of Nrf2. Moreover, the analysis of hydrogen bonds revealed a correlation between the number of hydrogen bonds and Z scores, indicating that stronger interactions might contribute to inhibitory effects. Enzymes with a higher number of hydrogen bonds, such as α-amylase and neutral protease, showed potential inhibitory properties against Nrf2, while enzymes with lower hydrogen bond counts, such as gelatinase B and cellulase, may have different inhibitory mechanisms. The assessment of non-bonded contacts provided additional insights into the interaction surface area and potential stability of the complexes. In conclusion, the findings highlight enzymes, including DNase 1, α-amylase, and lecithinase C, as promising candidates for further exploration as potential inhibitors of Nrf2-mediated cellular responses.

Keywords: protein-protein interaction, nuclear factor-erythroid-2 factor 2 (Nrf2), inhibition, extracellular enzymes, water kefir.

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PP22

THE TEST OF ACTIVITY *SYZYGIUM CUMINI* LEAF OF ETHANOL EXTRACT ON KIDNEY AND PANCREAS HISTOPATHOLOGY DAMAGE SCORE AND IMAGE ANALYSIS OF DIABETES MELLITUS MODEL

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ABSTRACT

Diabetic nephropathy is a disease experienced by diabetic patients. In this disease damage to the glomerulus occurs. The administration of antidiabetic drugs tends to cause unwanted side effects, so there is a need for alternative treatment from herbs, one of which is juwet *(Syzygium cumini)*. *S. cumini* leaf have chemical content such as flavonoids, alkaloids, tannins, steroids and saponins. Flavonoids reduce blood glucose levels by increasing insulin secretion and mimetic agents, tannins slow carbohydrate digestion and saponins repair pancreatic beta cells and increase glycogen in the liver[1,2]. This study aimed to determine the effect of juwet *(S. cumini)* ethanol on the histopathology damage score of male white rat kidney (*Rattus norvegicus*) induced by streptozotocin. The test animals used were 30 male white rats divided into six treatment groups, each group consisting of five male white rats, namely the normal control group, negative control group, positive control group, treatment group with doses of 200 mg/kg bw, 250 mg/kg bw, and 300 mg/kg bw. The parameters tested were kidney tissue damage score and histopathology image analysis. The results showed that the ethanol extract of juwet *(S. cumini)* leaf was known to contain alkaloid metabolites, flavonoids, saponins, steroids and tannins. The result showed that the ethanol concentrate of juwet *(S. cumini)* leaf in a portion of 200 mg/kg bw significantly affecting bringing down blood glucose levels with a typical worth of 110 mg/dl and a portion of 250 mg/kg bw was a viable portion in fixing pancreatic tissue with a typical worth of harm 1.8. Administration of juwet *(S. cumini)* leaf ethanol extract at a dose of 200 mg/kg bw can have a clinical effect on renal tubular injury in diabetic rats, with an average damage value of 1 out of a maximum of 4.

Keywords: *Syzygium cumini*, Histopathology, streptozotocin, Damage Score.

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PP26

SCREENING ANTIURICEMIA POTENTIAL OF SOME INDONESIAN MEDICINAL PLANTS THROUGH XANTHINE OXIDASE INHIBITION *IN VITRO* ASSAY

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ABSTRACT

Hyperuricemia is a condition that occurs because of the excessive concentration of uric acid in blood over the normal limit, caused by increased xanthine oxidase activity. The risk of developing gout is strongly associated with the degree of hyperuricemia[1]. Indonesian people have traditionally used plant materials to treat gout[2]. In this research, the xanthine oxidase inhibitory activity of twelve plants, empirically used as gout medicine by Indonesian people, was examined. The *in vitro* assessment of xanthine oxidase inhibition activity was tested on extracts from *Eleutherine bulbosa* (Mill.) Urb. bulbs, *Pandanus amaryllifolius* Roxb. leaves, *Alyxia reinwardtii* Blume stem barks, *Ruta angustifolia* Pers aerial parts, *Dioscorea hispida* Dennst tubers, *Plantago major* L. leaves, *Symphytum officinale* L. roots, *Euphorbia hirta* L. aerial parts, *Chromolaena odorata* L. leaves, *Solanum torvum* Sw fruits, *Peperomia pellucida* L. Kunth. aerial parts and *Strobilanthes crispa* L. Blume leaves. This study aimed to investigate the anti-hyperuricemia potential of the plant extracts through the *in vitro* test of xanthine oxidase inhibition. The measurement of xanthine oxidase enzyme inhibitory activity was using UV spectrophotometry[3]. The results of this study showed that all plant extracts tested can inhibit xanthine oxidase activity with IC_{50} values varying from 27.80 µg/mL to 47.14 µg/mL. The IC_{50} value of allopurinol, used as positive control was 1.24 µg/mL. Among all the extracts tested, *S. crispa* L. Blume leaves extract has the best inhibitory activity against xanthine oxidase enzyme with IC_{50} value 27.80 µg/mL, so It has the potential to be developed into herbal medicine to treat hyperuricemia. This study provides scientific support for the anti-hyperuricemia activity of these herbs, which are empirically used to treat gout.

Keywords: hyperuricemia, uric acid; xanthine oxidase, gout, plant extract

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PP28

FORMULATION AND EVALUATION OF HAND AND BODY LOTION FROM PURPLE SWEET POTATO (*IPOMOEA BATATAS* L.) PEEL EXTRACT AND ITS ANTIOXIDANT ACTIVITY

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ABSTRACT

Purple sweet potato tuber (*Ipomoea batatas* L.) is a plant that has high antioxidant activity, but its use only limited to the flesh of the tuber while the peel is rarely used that it becomes waste that disposed[1]. This study aimed to investigate purple sweet potato peel extract antioxidant activity. To obtain antioxidant activity levels of hand and body lotion formulas using purple sweet potato peel extract as an antioxidant agent, and evaluate them to determine the formula with best physical stability. The antioxidant activity assessed by free radical inhibition 2,2-Diphenyl-1-picrylhydrazyl (DPPH) method, and the physical stability of hand and body lotion formula was evaluated within 4 weeks room temperatures storage according to lotion characteristics measurement such as organoleptic, pH, homogeneity, viscosity, phase separation, and spread power. The results of this study showed that purple sweet potato peel extract had an antioxidant activity with IC_{50} value 44,582 ppm. Antioxidant activity of hand and body lotion formulas IC_{50} value was 83,319 ppm, 63,181 ppm, and 24,107 ppm for the formulas that contained 1%, 3%, and 5% extracts respectively. The best physical stability hand and body lotion formula contained 3% extract because the lotion remained physically stable after 4 weeks room temperatures storage. Based on these results, it can be concluded the extract of purple sweet potato peel presented very strong antioxidant activity and has the good potential to utilize in hand and body lotion formula as an antioxidant agent.

Keywords: Antioxidant, *Ipomoea batatas* L., Purple sweet potato peel, Lotion

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PP29

OPTIMIZATION OF *Lactobacillus plantarum* FERMENTATION FOR ENHANCED PHENOLIC PRODUCTION FROM BARK EXTRACT OF BAJAKAH (*Uncaria nervosa*) BY *RESPONSE SURFACE METHODOLOGY*

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ABSTRACT

The Bajakah plant is one of the plants empirically used as traditional medicine antimicrobia candidates and other pharmacological activities[1]. However, bajakah plants are hard to reach and rare[2], a strategy is needed to increase the levels of secondary metabolites as primary targets on this study for antibacterial against *Propionibacterium acnes*. Extract fermentation using *Lactobacillus plantarum* was found to be effective for enhancing the antibacterial metabolites compound. Therefore, this study was aimed to optimize the fermentation medium and condition of *Lactobacillus plantarum* to enhance the production of phenolic compounds with the antimicrobial activity tested against *Propionibacterium acnes*. In the study, the statistical approach for design experiments was implemented using Software Design Expert 10.0.0.1. Fermentation time 1-3 d extract concentration 20-40% (w/v), and sucrose concentration 20-40% (w/v) were the variables used in this study. Response surface analysis revealed the optimum values of the tested significant variables for the production of phenolic were extracted in a concentration 40% (w/v) and 30% (w/v) sucrose for 3 days fermentation period accordingly. Under this optimal condition, the phenolic compound was improved from 10,66 to 18,46 mg GAE/g extract. As well as the antibacterial activity of the fermented extract was increased 1,35 times compared to non fermented extract. We thus conclude that the optimized fermentation condition in the study would be helpful for the production of antibacterial metabolites from bajakah bark by *L. plantarum*.

Keywords: Bajakah, *Propionibacterium acnes*, *Uncaria nervosa*, *Lactobacillus plantarum*, Phenolic, *Response Surface Methodology*

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PP30

IN SILICO STUDY OF 5-BOTP AND ADPB AS CARRIERS OF RADIOTHERANOSTIC COMPOUNDS AGAINST LAT-1

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ABSTRACT

The complexity of cancer pathogenesis makes it challenging to find the right therapeutic target, leading to low success rates in clinical trials for cancer-related drugs. Therefore, developing a new intervention technique for cancer patients is crucial[1]. Large-type Amino Acid Transporter 1 (LAT-1) is overexpressed in cancer cells when compared to normal cells, making it one of the particular molecular targets for cancer therapy. LAT-1 function is to provide nutrition to cancer cells to proliferate massively so that the inhibition of LAT-1 can be used as an alternative cancer therapy[2]. Therefore, this study aims to obtain a good activity of radio theranostic kit for cancer by two potential compounds, 5-Benzyloxytryptophan (5-BOTP) and (S)-2-amino-4-(3,5-dichlorophenyl) butanoic acid (ADPB) with linker and various bifunctional chelating agents (BFCA) against the antiporter site of the LAT-1. The research method consisted of the binding mode of 5-BOTP and ADPB with their derivatives with LAT-1, the docking score, and the analysis of pre-ADMET. The results showed that 5-BOTP-6AHAH2CB-DO2A and ADPB-6AHA-H2CB-DO2A have the best affinity and easier made binding complex with LAT-1 making them both a potential theranostic agent of cancer by inhibiting LAT-1.

Keywords: Cancer, radiotheranostic, LAT-1, 5-Benzyloxytryptophan, (S)-2-amino-4-(3,5-dichlorophenyl) butanoic acid.

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PP31

JOURNAL OF THE POTENTIAL OF FLAVONOID COMPOUNDS IN PLANTS FOR THE TREATMENT OF PARKINSON'S

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ABSTRACT

Flavonoids are one of the secondary metabolites contained in the polyphenol large group of plants. The compounds in flavonoids can be used as an alternative therapy for the treatment of neurodegenerative diseases[1,2]. This study aims to determine medicinal plants that have the potential to treat Parkinson's, a subgroup of flavonoids that have potential as a treatment for Parkinson's, and the mechanism of action of flavonoids in providing Parkinson's treatment activity[3]. This research is a descriptive study using qualitative methods, namely collecting data and obtaining as much data as possible. The results of research in the journal 2010-2020 show that medicinal plants contain flavonoids that have the potential to treat Parkinson's, namely green tea (*Camellia sinensis*), oranges (*Citrus sinensis*), celery (*Apium graveolens*), broccoli (*Brassica oleraceae*), Mawar (*Rosa multiflora*), rosella (*Hibiscus sabdarifa*), ginko biloba (*Ginko biloba*), pegagan (*Centella asiatica*). While the flavonoid subgroups that have potential as a treatment for Parkinson's are flavanols, flavanones, flavones, anthocyanins and flavonols. The mechanism reviewed includes effect of flavonoids in activation of endogenous antioxidant enzymes, suppressing the lipid peroxidation, inhibition of inflammatory mediators, flavonoids as a mitochondrial target therapy, and modulation of gene expression in neuronal cells.

Keywords: Flavonoids, Flavonoid Subgroup, Medicinal Plants, Parkinson's Disease

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PP32

THE IMPACT OF PORE SIZE ON THE DRUG LOADED-MESOPOROUS SILICA

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ABSTRACT

The drug loaded-mesoporous silica (MS) is a promising strategy to improve the solubility of poorly water-soluble drugs. The nanoconfinement effect and the surface interaction on MS can stabilize amorphous drugs[1-3]. This study aimed to characterize alpha-mangostin (AM) loaded-MS and determine the maximum amount of AM within MS. Solvent evaporation was used to load AM into MPS (AM/MS), and further characterized by powder X-ray diffraction (PXRD), differential scanning calorimetry (DSC), and Fourier Transform Infrared Spectroscopy (FT-IR). The result showed the absence of crystalline diffraction peaks in the PXRD pattern and the melting peak in the DSC curve indicating the successful encapsulation of AM within MS. In the pore size of 4.5, the absence of crystalline diffraction peaks and the melting peak of AM was observed in AM/MS=3/7, while in the pore size of 1.8 was AM/MS=2:8. The characteristic signal of silanol groups from MS disappeared for both AM/MS, indicating the interaction between AM molecules with silanol groups of MS. These results indicated that the loading amount of AM within larger pore sizes is higher than the smaller sizes. This study demonstrated that the pore size of MS can affect the loading amount of drugs within MS.

Keywords: mesoporous silica; pore size, maximum drug loading; DSC curve, PXRD pattern

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PP33

ANTI-ACNE CREAM OF PAPERY SKIN EXTRACT OF MAJA CIPANAS ONION (*Allium cepa* L. var. ascalonicum) AGAINST *Propionibacterium acnes*

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ABSTRACT

Acne occurs when the skin pores were blocked with dead skin, oil, or bacteria[1]. Acne on the face was disturbing the appearance. Papery skin of Maja Cipanas onion (*Allium cepa* L. var. ascalonicum) is proven to contain flavonoids, polyphenols, tannins, and alkaloids[2]. This study aimed to formulate and evaluate anti-acne cream of papery skin of Maja Cipanas onion. The methods included extraction, phytochemical screening, formulation and evaluation of anti-acne cream, antibacterial activity assay against *Propionibacterium acnes*, irritation test on the rabbit's back, and preference test. The yield of percolation was 37.65% with the same content as reference. Brownish cream with a characteristic onion odor, pH range from 4 to 8, and oil in water type (O/W). Antibacterial activity was dose dependent, without erythema and edema, and the most preferred cream based on the texture and color was 1% extract formula. This study concluded that Maja Cipanas onion extract can be made into a safe cream with antibacterial activity against *P. acnes*.

Keywords: percolation, anti-acne cream, *P. acnes*, dose dependent, safe cream

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PP34

OPTIMIZATION OF KAPPA CARRAGEENAN POLYMER CONCENTRATION AND POTASSIUM CHLORIDE CROSSLINKER ON PHYSICAL CHARACTERISTICS OF GLUTATHIONE-KAPPA CARRAGEENAN NANOSPHERE

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ABSTRACT

The chemical compound glutathione is a highly potent antioxidant that possesses low bioavailability due to its easy degradation and oxidization[1]. One of the drug delivery systems that can improve drug stability is the nanosphere. An easy, fast, and relatively cost-effective method to manufacture nanosphere is through ionotropic gelation, which requires polymer and a crosslinker[2]. The polymer can be derived from natural materials or synthesis, while the crosslinker adapts to the polymer's physicochemical properties[3]. And one of the natural polymers for nanosphere systems is carrageenan[4]. Therefore, this research aimed to develop a formula optimization using a randomized full factorial design of 2^2 with differences in polymer concentrations, kappa carrageenan, and potassium chloride concentrations. The manufacture of glutathione-kappa carrageenan nanosphere through ionotropic gelation method with aerosol technique produced spherical nanosphere with a smooth surface and sizes ranging from 247.03 to 675.07 nm. Furthermore, the entrapment efficiency value ranged from 25.50 – 35.61%, and drug loading of 6.84 – 10.16%. The concentration of kappa polymer affected particle size, moisture content, entrapment efficiency, and drug loading. This indicated that higher polymer concentration resulted in greater particle size, moisture content, entrapment efficiency, and drug loading.

Keywords: nanosphere, glutathione, kappa carrageenan, potassium chloride, ionotropic gelation

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EUCALYPTOL FROM *Eucalyptus globulus* Labill. AS AN ANTIHYPERTENSIVE IN COVID COMORBID

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ABSTRACT

One of the most common comorbid diseases suffered by confirmed COVID-19 patients is hypertension which is also one of the comorbid diseases with the highest mortality rate[1]. Angiotensin Converting Enzyme (ACE) is considered to play an important role in controlling hypertension. Therefore, ACE can be a potential therapeutic target for antihypertensives. *In vitro* studies on *Eucalyptus globulus* Labill. showed the effectiveness of *E. globulus* oil as an antiviral against SARC-CoV-2 and can reduce blood pressure in rats. The study was carried out *in silico* through molecular docking simulations, analysis of potential compounds using Lipinski's rule, and ligand-based ADMET prediction[2] on 62 compounds of the *E. globulus*. It was found that eucalyptol (1,8-cineole) had the best interaction with the ACE as indicated by a bond energy value (ΔG) of -6.40 kcal/mol with an inhibition constant of 20.82 µM, and interacts with key amino acid residues in captopril, namely HIS513, HIS353, TYR523, and ALA354. Eucalyptol also had good physicochemical properties by fulfilling Lipinski's rule and had the best ADMET profile compared to other compounds.

Keywords: ACE, ADMET, Antihypertensive, Eucalyptol, *Eucalyptus globulus* Labill.

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PP37

POTENTIAL OF THE EXTRACT, ETHYL ACETATE, AND N-HEXAN FRACTIONS FROM QUST AL HINDI (*Sausserea lappa*) AS ANTIHYPERURICEMIC

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ABSTRACT

Hyperuricemia is a disease caused by the increase of uric acid levels in the blood. Uric acid is a product of purine metabolism which settles in joints and forms small crystals, causing intense pain and stiffness, as well as enlargement and protrusion of swollen joints[1]. Currently use of natural ingredients as anti-hyperuricemia is being developed, and one of the potential plants that contain various bioactive compounds that can be used in drug development, such as anti-hyperuricemia, is Qust al Hindi (*Sausserea lappa)*[2]. This study aims to determine the *inhibition concentration* (IC_{50}) of the extract, ethyl acetate, and n-hexane fractions as a result of xanthine oxidase inhibition[3]. The research method used was inhibition of the xanthine oxidase enzyme *in vitro*, started with extraction and fraction using the liquid extraction method with increasing polarity, then a comparison solution and allopurinol was used as positive control. After that, Pipette 2 µL of the sample test solution from each concentration and then add 2 µL xanthine, 44 µL phosphate buffer solution, and 2 µL xanthine oxidase enzyme. The addition of enzymes was carried out on an ice box to equalize the incubation time. The solution was incubated for 20 minutes at 25 ºC. After incubation, the absorbance was measured using a microplate reader at 570 nm. The results showed that the inhibition concentration (IC_{50}) values of the extract, ethyl acetate and n-hexane were 79.87µg/L, 83.92 µg/mL and 72.85 µg/mL respectively, which classified as strong but still weaker than allopurinol which has an IC of $_{50}$ of 1.18 µg/mL (very strong category). Extracts and fractions of *Saussurea Lappa* have a significant effect on inhibiting xanthine oxidase which can reduce the formation of uric acid in the blood and has potential as an anti-hyperuricemia drug.

Keywords: antihyperuricemic, uric acid, xanthine oxidase, *in vitro*, *Sausserea lappa*

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PP38

MOLECULAR DOCKING AND MOLECULAR DYNAMICS OF GOTU KOLA (*Centella asiatica* L.) COMPOUNDS TO TYPE 1 ANGIOTENSIN II RECEPTORS AS ANTIHYPERTENSIVES

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ABSTRACT

Non-communicable diseases, including hypertension, are a significant source of health issues in developed nations[1,2]. Angiotensin II Receptor Blocker (ARB) is frequently used as the first-line treatment for hypertension[3,4]. ARB works by inhibiting Angiotensin II which can cause vasoconstriction of entire blood vessels[3,5]. This study aimed to find lead compounds of 54 compounds obtained from gotu kola (*Centella asiatica* L.) in order to determine the antihypertensive activity. The target of drug action chosen in this study was the type 1 angiotensin II receptors (AT1). Molecular docking and molecular dynamics simulation were chosen as the methods in this study to predict the interaction and the affinity and stability of the interaction. Based on the results of molecular docking, it was found that the compound of campesterol, centellasaponin B, and corosolic acid gave good affinity to the targets. The test ligand that the Ki and ΔG values were close to the natural ligand (Olmesartan) campesterol with a value of -10.79 kcal/mol and 12.28 nM. Meanwhile, in the molecular dynamics simulation test, it was found that corosolic acid has good interaction stability with the targets and was constant from the beginning of the simulation to 100 ns, while for MMGBSA centellasaponin B the lowest total energy value was -71.4347 kcal/mol. It was concluded that the gotu kola (*C. asiatica* L.), compound corosolic acid, and centellasaponin B had the potential as a lead compound that had affinity and stability for the interaction with the AT1 receptor as antihypertensives.

Keywords: AT1, *Centella asiatica* L., Molecular Docking, Molecular Dynamics, Antihypertensive.

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PP39

MICROBIOLOGICAL EFFECTIVENESS STABILITY OF CHLORAMPHENICOL OPHTHALMIC *IN SITU* GEL

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ABSTRACT

In situ gel is a solution that undergoes a reversible phase transition (sol-gel-sol) caused by polymer changes due to the process of forming complex structures in response to the environment. In situ gel can increase the retention time of the drug in the eye, increase bioavailability, minimize systemic absorption and reduce the dosage regimen resulting in increased patient adherence. The optimization studies of formulation and evaluation physically, chemically and microbiologically have been carried out. It is known that the formula with a base mixture of poloxamer 407 (5%) and HPMC (0.45%) is the most optimal formula. Stability studies are needed to ensure the effectiveness, quality, safety and efficacy of the product during the shelf life[1-3]. This study aims to determine the stability of the ophthalmic chloramphenicol in situ gel with a base mixture of poloxamer 407 (5%) and HPMC (0.45%) in various storage conditions in terms of microbiological effectiveness. This research method includes dosage formulation and stability test in terms of microbiological effectiveness. The results showed that the diameter of chloramphenicol in situ gel inhibition was very strong against *Staphylococcus aureus* ATCC 25923. Based on the one way ANOVA analysis, there is a significant difference in the storage time against the chloramphenicol in situ gel inhibition zone. Chloramphenicol *in situ* gel preparations based on Poloxamer 407 (5%) and HPMC (0.45%) were stable at climatic chamber temperature (40 ± 2 °C / 75%RH), room temperature (25 ± 2 ˚C / 60% RH ± 5%), and cold temperature (5 ± 3 ˚C) for 90 days of storage in terms of microbiological effectiveness.

Keywords: In situ gel, stability, microbiological effectiveness, chloramphenicol, poloxamer 407, HPMC, *Staphylococcus aureus*.

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PP40

COST-EFFECTIVENESS ANALYSIS OF TREATMENT IN GASTROESOPHAGEAL REFLUX DISEASE INPATIENT PATIENTS IN BANDUNG, INDONESIA

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ABSTRACT

The prevalence of Gastroesophageal Reflux Disease (GERD) in Indonesia reached 27.4% in 2015, and is increasing due to lifestyle changes[1]. This study aimed to analyze the cost-effectiveness of the GERD treatment management strategy for class II inpatient patients at a hospital in Bandung, Indonesia. This study was retrospective using medical record data collection techniques for 103 patients of the Social Security Administrator for Health (Badan Penyelenggara Jaminan Sosial, BPJS), from January 2017 to July 2019. The pharmacoeconomic method was Cost-Effectiveness Analysis[2]. The medicines being compared were omeprazole injection and pantoprazole injection. The outcome parameter was length of stay (LoS). The perspective was a hospital with a direct cost component. This study uses a 5% discounting rate due to difference in years. The results showed that the patient majority was female (76%) and the largest age group was >40 years (53%). There was a significant difference in LoS and total cost between omeprazole and pantoprazole (p-value <0.050) using the Mann Whitney test. The Cost Effectiveness Ratio showed that omeprazole has a lower value than pantoprazole of IDR 688,38 per day. The study concluded that therapy using pantoprazole is more cost effective than omeprazole.

Keywords: GERD, LoS, Cost Effectiveness Analysis, Omeprazole, Pantoprazole

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PP41

ANTI-ACNE CREAM OF LEAVES EXTRACT OF FIG (*Ficus carica* L.) FROM CIWIDEY DISTRICT, INDONESIA, AGAINST *Propionibacterium acnes* AND *Staphylococcus epidermidis*

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ABSTRACT

Fig (*Ficus carica* L., family Moraceae) from Ciwidey has been proven to contain flavonoids and phenolic compounds[1] which play a role in antioxidant and antibacterial activity against Propionibacterium acnes and Staphylococcus epidermidis[2]. This study aimed to formulate and evaluate anti-acne cream of leaf fig. The methods included formulation and evaluation of anti-acne cream, antibacterial activity assay against *P. acnes* and *S. epidermidis*, irritation test, and preference test[3]. Greeenish cream with a characteristic fig fragrant, range viscosity from 3,320 to 3,880 cP, range pH from 6.69 to 7.23, and oil in water type (O/W). Antibacterial activity was dose dependent, without erythema and edema, and the most preferred cream based on the texture and fragrant was 3% extract formula. This study concluded that leaf fig extract can be made into a safe cream with antibacterial activity against *P. acnes S. epidermidis*.

Keywords: fig leaf extract, *P. acnes, S. epidermidis,* safe cream, dose dependent

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PP42

THE IMPACT OF POLYVINYLPYRROLIDONE ON THE INHIBITION OF CRYSTAL NUCLEATION OF RITONAVIR FROM SUPERSATURATED SOLUTIONS

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ABSTRACT

Amorphous solid dispersions are one of the methods for maintaining supersaturated conditions. The presence of polymer can inhibit drug nucleation and maintain the high supersaturation of amorphous drugs via drug-polymer interactions[1-3]. Therefore, this study aimed to evaluate the interaction of drugs with polymers in maintaining supersaturated concentrations after dispersing in water. Therefore, this study aimed to evaluate the impact of polymer on the supersaturation behavior of drugs and elucidate the mechanism of its crystallization inhibition in an aqueous solution. It was carried out using ritonavir (RTN) as a model of poorly water-soluble drugs, while polyvinylpyrrolidone (PVP) was used as a polymer. The inhibition of the nucleation of RTN by PVP was determined by measuring the induction time. The interactions of RTN with PVP were elucidated by FT-IR, ^{1}H NMR measurements, and an in silico analysis. The results showed that RTN started to precipitate after 30 min despite in the absence of the polymer, indicating that it has a low crystallization tendency. PVP effectively inhibited the nucleation of RTN, as reflected by a 16-fold enhancement in the induction time. Furthermore, FT-IR, ^{1}H NMR measurements, and an in silico analysis demonstrated that the hydrogen bond interaction between the RTN and PVP was observed. This indicated that the hydrogen bond interaction of RTN-PVP contributed to the crystallization inhibition and maintenance of RTN in a supersaturated state. Therefore, the addition of PVP can inhibit the nucleation of RTN, which is crucial for stabilizing supersaturated drug solutions.

Keywords: supersaturation; amorphous; ritonavir; PVP; nucleation; crystallization

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PP43

TOPOISOMERASE INHIBITOR ACTIVITY OF JAMU GENDONG PAHITAN (BITTER HERB) USING MECHANISM-BASED YEAST BIOASSAY

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ABSTRACT

Jamu gendong is a traditional medicine in Indonesian culture that is sold by carrying it on the back of women using a shawl. The ingredients are made from roots, stems, leaves and flowers, which are brewed with hot water and then filtered and drunk[1]. Among the concoctions for jamu gendong on the market, namely bitter herbs (Pahitan), which consist of bitter leaves (sambiloto) and brotowali stems. Each component of this herb has been reported to have activity as anticancer. Sambiloto leaves contain andrografolid compounds which have been reported in studies to induce apoptosis and inhibit cancer cell growth[2]. Brotowali stems contain tinocrisposid, berberine, columbine, picrotoxin, flavonoids, terpenoids, and phenolic compounds which have been reported to have anticancer activity by inducing apoptosis in cancer cells[3,4]. However, the composition of these plants as bitter herb ingredients has never been reported. Therefore, this research was conducted to screen the anticancer activity of bitter herbs in fresh material and extract forms using a mechanism-based yeast bioassay method[5]. The results showed that the herbal medicine from the market was inactive (IC_{12}<8000 µg/ml), while the herbal medicine made in laboratory doses 1 and 2 had topoisomerase I inhibitor activity. Based on the IC_{12} value, the bitter-herbs extract dose 3 had the best activity with IC_{12} values in strains 1138, 1140, and 1353 respectively with 926.28±173; 576.75±42; and 865.5±135µg/ml. According to this research, bitter herbs have the prospect to be developed as natural anticancer agents since of topoisomerase inhibitors is one of the mechanism of anticancer drugs.

Keywords: Jamu gendong, bitter-herbs, pahitan, topoisomerase inhibitor, anticancer

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PP44

COMPARISON OF PARTITION COEFFICIENT (LOG P) OF DRUGS: COMPUTATIONAL AND EXPERIMENTAL DATA STUDY

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ABSTRACT

The partition coefficient describe the lipophilicity of drugs, one of the important parameter in the physicochemistry properties and biological activity of drugs[1]. The partition coefficient can be determined experimentally or calculated using a software program[2]. The objective of this study is to determine the accuracy of the Log P calculation program (*OSIRIS*®, SCF bio®, Molinspiration®, ALOGPS 2.1®, Molsoft®, ACD/LogP ®, PkCSM ®, and Swiss ADME ®) comparing it with the Log P value from the experimental results of the partition coefficient between n-octanol-water (Log P exp) taken from journals and databases[2]. The predicted results of the computational Log P as the independent variable and the experimental Log P as the dependent variable then the data were analyzed statistically with the SPSS program to find the best correlation. In this study, the result shows that the applications that have the best correlation with the experimental Log P are ACDlogP, MolLogP, and ALOGPS, with successive results of the R square are 0.928, 0.921, and 0.907, respectively. The results of this correlation are expressed by positive results and high-degree correlations are obtained. This result suggests that the Log P calculation program (ACDlogP, MolLogP, and ALOGPS) has a good correlation with the experimental Log P value in determining the lipophilicity of the compound.

Keywords: partition coefficient; Log P; drug; computational study; experimental study; statistical analysis

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PP45

CYTOTOXICITY ACTIVITY OF EXTRACT AND FRACTIONS OF *Pouteria campechiana* LEAVES AGAINST MCF-7 CELL LINE

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ABSTRACT

Poucheria campechiana, or campolay, has been used as an edible fruit source as well as a remedy for fevers, ulcers, and antiseptics[1]. There have been a number of reports showing *Pouteria* plants to be cytotoxic against a variety of cancer cell lines[2]. This study investigated the cytotoxicity of ethanolic extracts of leaf and their fractions against human breast adenocarcinoma cells (MCF-7). The extraction procedure consisted of maceration with ethanol, followed by liquid-liquid fractionation to produce n-hexane and ethyl acetate fractions. The WST-8 method was used to evaluate cytotoxic activity in human breast adenocarcinoma cells (MCF-7). The ethanol extract and ethyl acetate fractions exhibited moderate cytotoxicity with IC50 values of 109.3 and 90.5 ppm respectively, whereas the n-hexane fraction exhibited lower cytotoxicity with an IC50 value of 371.2 ppm. Phytochemical screening of ethyl acetate fraction that showed higher cytotoxicity exhibit the presence of phenolic, flavonoid, quinone, monoterpene and sesquiterpene, and triterpene/steroid. Further separation step of ethyl acetate fraction by vacuum liquid chromatography yielded four subfractions, one of which showed stronger cytotoxicity with IC50 value of 29.7 ppm.

Keywords: *Pouteria campechiana*, cytotoxicity, phytochemical screening, MCF-7

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PP47

META-TYROSINE CONJUGATES LABELED ^{64}CU AND ^{68}GA AS A CANCER RADIODIAGNOSIS AGENT THROUGH A COMPUTATIONAL MOLECULAR STUDY ON LAT-1

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ABSTRACT

According to data reported by the Global Burden of Cancer (GLOBOCAN), in 2020, cancer cases in the world reached 19,292,789 new cases[1]. This presents a challenge to improve the quality of life and treatment for cancer. Compared to normal cells, cancer overexpressed Large-type Amino Acid Transporter 1 (LAT1), making it a particular molecular target for cancer therapy[2]. Thus, inhibiting LAT1 might be employed as a cancer treatment approach. Therefore, this study aims to obtain a good activity of radio-theragnostic kit for cancer by combining meta-tyrosine compounds JX-075, JX-078, and JX-119 as LAT-1 inhibitors with various bifunctional 64Cu and 68Ga and chelators (DOTA, NOTA, and NODAGA)[3]. This study was conducted through *in silico* method that consists of molecular docking simulation using a Molecular Operating Environment. The LAT-1 receptor (PDB ID: 7DSQ) included with the native ligand (3,5-diiodotyrosine) was downloaded from the Protein Data Bank website and derivative compounds of meta-tyrosine (carrier molecule) conju-gated with DOTA, NOTA, and NODAGA as chelators, then labeled with 64Cu and 68Ga as ra-dionuclide to build ligand. Results from the study showed the compounds conjugated to NODAGA can interact with the amino acid LAT1 and close the LAT-1 receptor gating channel. JX119_NODAGA_64Cu and JX119_NODAGA_68Ga have the best affinity and easier made binding complex with LAT1 (S-value: -9.09 kcal/mol and -9.22 kcal/mol respectively) related to the ability to bind with the gating residue of LAT1. JX119_NODAGA_68Ga interacts with three of the six key amino acids in the LAT-1 protein Asn258; Phe252; Tyr259. Meanwhile, JX119_NODAGA_64Cu interacts with two of the six key amino acids in the LAT-1 protein Phe252; Tyr259.

Keywords: Cancer; LAT-1; Radiodiagnosis; MOE

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OPTIMIZATION OF RECOMBINANT ANTIMICROBIAL PEPTIDE LL-37 ANTIMICROBIAL PEPTIDE PRECURSOR EXPRESSION IN ESCHERICHIA COLI BL21 (DE3)

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ABSTRACT

LL-37 is an antimicrobial peptide found in the human body that has the potency to overcome antibiotic resistance[1,2]. So that the expression of the synthetic LL-37 precursor was constructed in plasmid pJexpress401, transformed into Escherichia coli BL21 (DE3) and expressed using different concentrations of medium and IPTG as an inducer[3]. The aim of this research was to determine medium concentration and the amount of IPTG used to induce optimal gene expression. First, gene expression was performed at 0.5x, 1x, 1.5x, and 2x media concentration. Then, gene expression was continued using the IPTG inducer at concentrations of 0.5, 1, 1.5 and 2 mM. The results showed that the use of 1x media concentration and 1 mM IPTG yielded the highest target protein expression based on ImageJ analysis. Thus, optimal expression of the gene encoding the LL-37 precursor was performed at 1x media concentration and 1 mM IPTG concentration.

Keywords: Antimicrobial peptide, LL-37 precursor, Escherichia coli BL21 (DE3), IPTG, ImageJ

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PP49

PREPARATION AND CHARACTERIZATION OF BIOPLASTIC WITH SORGHUM (*Sorghum bicolor* L.) STARCH BASED AND COMBINATION OF CHITOSAN

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ABSTRACT

The use of plastic in pharmaceutical field is quite extensive, starting from product packaging, components in medical device products, various single-use dispensing bags for medicines, even the use of additional plastic bags for final payment items. According to Plastics Europe Market Research Group, global plastic production reached around 360 tons in 2018. The excessive use of plastics can have adverse effects on human health and the environment. Therefore, more environmentally friendly alternatives materials such as bioplastics are being developed[1]. One of the main ingredients of bioplastics is starch. Starch can be obtained from various plants such as sorghum. Sorghum (*Sorghum bicolor* L.) is a plant with a high starch content, which is around 71.84 – 85.14%[2,3]. In bioplastics production process, combination of starch with other materials such as chitosan fillers can improve its characteristics[4]. This research was conducted to produce and characterize sorghum starch based bioplastic that combine with chitosan filler. The research were carried out with several stages, namely determination of sorghum plant, preparation and quantitative analysis of sorgum starch, production of bioplastic, characterization and biodegradability test of sorghum starch based bioplastic product. Bioplastics were made using phase inversion technique with variation of formulas for sorghum starch:chitosan 10:0, 9:1, 8:2, and 7:3 gram/gram. The result showed that compared to other formulas, bioplastic with a ratio of 7:3 had higher values for several parameters, namely tensile strength (12.247 ± 0.151 MPa), modulus of elasticity (65.948 ± 0.021 MPa), density (2.04 ± 0.019 g / cm3) and the amount of water absorbed (470.815 ± 1.269%), while the value of elongation at break was lower (7.676 ± 3.186 %). This product was degraded as much as 43.650 ± 1.671 % after being buried in the soil for 15 days.

Keywords: bioplastic, sorghum, starch, chitosan

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PREPARATION AND CHARACTERIZATION OF AMORPHOUS SOLID DISPERSIONS FROM ALPHA-MANGOSTIN AND POLYVINYLPYRROLIDONE, AND ITS IMPACT ON THE PHARMACEUTICAL PROPERTIES

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ABSTRACT

Amorphous solid dispersions (ASD) are widely used in the pharmaceutical industry to increase the solubility of poorly water-soluble drugs[1-3]. Therefore, this study aimed to prepare ASD formulation, characterize the interaction of drug-polymer in ASD, and evaluate the impact of their interaction on the physical stability and dissolution of drugs. Alpha-mangostin (AM) was used as a model of a poorly water-soluble drug, while polyvinylpyrrolidone (PVP) as a polymer. The amorphization of ASD AM-PVP was confirmed as having a halo pattern with powder X-ray diffraction measurements and the absence of an AM melting peak in the differential scanning calorimetry (DSC) curve. In the solubility test, the presence of PVP could increase the solubility of AM via amorphization and drug-polymer interaction. Furthermore, the hydrogen bond interactions between the carbonyl group of AM and the proton of PVP were elucidated by FT-IR spectroscopy and *in silico* studies. The AM-PVP samples retained the X-ray halo patterns, even after 30 day-storage under humid conditions. In a dissolution test, the presence of PVP in the ASD system could significantly improve the dissolution profile of AM. However, a high supersaturation of AM was not achieved in ASD AM-PVP because it formed large agglomerations, leading to a slow dissolution rate. Based on the results, the interaction between drug and polymers in ASD systems can significantly improve the physical stability and dissolution of drugs.

Keywords: alpha-mangostin; amorphous solid dispersion; hydrogen bond; physical stability; dissolution

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PREPARATION AND CHARACTERIZATION OF CO-AMORPHOUS RITONAVIR–SACCHARIN BY SOLVENT EVAPORATION

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ABSTRACT

Coamorphous is a combination of a drug and a small molecule excipient (coformer) that can increase the solubility of poorly water-soluble drugs[1-3]. Therefore, this study aimed to prepare coamorphous ritonavir (RTV) and saccharin (SAC), characterize the interaction of RTV-SAC, and evaluate the impact of their interaction on the physical stability and dissolution of RTV. The amorphization of RTN-SAC was confirmed as a halo pattern in powder X-ray diffraction measurements and a single glass transition event in the differential scanning calorimetry (DSC) curve. ^{13}C solid-state NMR spectroscopy revealed a hydrogen bond between the thiazole nitrogen of RTN and the amine proton of SAC. RTV amorphous recrystallized after 7 days of storage at 40 °C and 75 % RH, while coamorphous RTV-SAC retained the X-ray halo patterns, even under humid conditions. In a dissolution test, the presence of SAC in the RTV amorphous could significantly improve the dissolution profile of RTV. However, the high supersaturation of RTV was not achieved in coamorphous due to the formation of large agglomerations. This study demonstrated that the drug-coformer interaction can significantly improve the physical stability and dissolution amorphous drugs.

Keywords: coamorphous; ritonavir; saccharin; physical stability; dissolution

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ISOLATION AND REFOLDING SCFV ANTI-HER2 FROM INSOLUBLE FRACTION AND PURIFICATION WITH NI-NTA AFFINITY CHROMATOGRAPHY

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ABSTRACT

Breast cancer is the type of cancer with the highest number of cases in Indonesia and one of the leading causes of death from cancer. In the treatment of cancer, single chain fragment variable (scFv) a recombinant antibody that is very small in size (26-27 kDa) is being developed and has very good potential as a guide compound for disease diagnosis and therapy[1-3]. Previous studies have succeeded in determining the optimum conditions for intracellular expression of scFv anti-HER2 using *E.coli* BL21 (DE3). In this study, we isolate scFv anti-HER2 from the insoluble fraction using 6M urea and 1% sarcosyl, refolding the protein using the refolding on column and dialysis method, purification using affinity chromatography polyhistidine tag (Ni-NTA). This research was conducted to obtain native and pure scFv anti-HER2 protein. The results showed that buffer containing low concentrations of urea or 1% sarkosyl (sodium lauroyl sarcosinate) could dissolve scFv anti-HER2 from the insoluble fraction but the native scFv anti-HER2 protein from the insoluble fraction had not been successfully refolded and purified by chromatography Ni-NTA. This purification method is hampered because sarcosyl and EDTA present in the insoluble buffer solvent fraction interfere with protein and Ni-NTA bonding and the dialysis method is not optimal for protein refolding.

Keywords: scFv, HER2+ Breast Cancer, Inclusion Bodies, Dissolution of Insoluble Fraction, Refolding

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FORMULATION AND EVALUATION OF LIP GEL POMEGRANATE (*Punica granatum* L.) PEEL EXTRACTWITH VARIATION OF CARBOMER 940 CONCENTRATION AS GELLING AGENT

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ABSTRACT

Pomegranate (*Punica granatum* L.) peel extract has flavonoid compounds that can be used as antioxidants[1,2]. Carbomer 940 is one of the gelling agents of synthetic polymer derivatives that can affect the quality of lip gel preparations. This study aimed to obtain lip gel preparations from pomegranate peel extract that meet the evaluation requirements and to determine the effect of variations in carbomer concentration on the results of dosage evaluation. Three lip gel preparations were made with variations in carbomer concentration, namely F1 (0.5%), F2 (0.75%), and F3 (1%). Physical evaluation carried out for 28 days with controlled room temperature storage (15-300C) includes organoleptic tests, homogeneity, pH, viscosity, spreadability, and adhesiveness. Formula F1 met the requirements for organoleptic, homogeneity, pH, and spreadability test evaluations, but did not meet the requirements for the adhesion test evaluation. Formula F2 meets the requirements for organoleptic test evaluation, homogeneity, pH, viscosity, adhesion, and spreadability. While formula F3 meets the requirements in the evaluation of organoleptic, homogeneity, pH, viscosity, and adhesion tests, but does not meet the requirements in the spreadability test. The results of the analysis on pomegranate peel extract lip gel preparation showed that the variation of carbomer as a gelling agent had a significant effect ($p<0.05$) on the viscosity, spreadability, and stickiness tests but did not have a significant effect ($p>0.05$) on the pH test. Overall, pomegranate peel extract can be formulated into lip gel.

Keywords: lip gel, pomegranate peel extract, carbomer, gelling agent

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A COMPARATIVE STUDY ON THE THERAPEUTIC EFFECT OF pH, TEMPERATURE TRIGGERED, AND ION ACTIVATED IN SITU GELLING SYSTEM FOR OCULAR DELIVERY

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ABSTRACT

A drug in situ gel is a drug delivery device that transforms into a gel after being applied to the body[1,2]. The findings revealed that the pH, temperature triggered, and ion activated gelling system factors had a substantial influence on the extended release medicines that affect the therapeutic effect of in situ gel medications. The purpose of this study is to compare the therapeutic efficacy of in situ gel medicines on pH, temperature triggered, and ion activated gelling systems. This comparative investigation demonstrates that the pH, temperature triggered, and ion activated gelling system factors have significant implications on the therapeutic benefits of in situ gelled medicines. A deeper knowledge of the relationships between these variables and in situ gel drug delivery methods can lead to the development of more effective and dependable medication compositions. These findings could aid in the development of improved gel in situ drug delivery systems to improve therapeutic benefits in the treatment of a variety of medical disorders.

Keywords: In Situ Gel, pH, Temperature, Ion activated

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PP55

THE POTENCY AND FORMULATION MUCOADHESIVE GRANULES OF ETHANOL EXTRACT GREEN GRASS JELLY (*PREMNA OBLONGIFOLIA* MERR.) LEAVES AS PEPTIC ULCER TREATMENT AGENT

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ABSTRACT

Green grass jelly (*Premna oblongifolia* Merr) grows a lot in Indonesia and is a traditional Indonesian food that is rich in fiber and has antioxidant activity[1]. The objective of the study was to examines the effect of ethanol extract from grass jelly leaves on ulcer healing and the optimal composition of mucoadhesive granules. Rats were grouped into negative control, positive control, and 3 test dose groups. Treatment was given for three days, gastrointestinal ulcers were given a score based on the quantity and severity of ulcers, and statistics were compared across treatment groups using a one-way ANOVA test. The results showed that the third dose test had activity in gastric ulcer healing compared to the negative control group, with the proportion of wound healing for dose 1 being (12.13%; p. 0.024), dose 2 being (20.93%; p. 0.004), and dose 3 being (24.4%; p. 0.000). Therefore, it can be concluded that the ethanol extract of green grass jelly leaves dose three was chosen as the optimal dose for treating gastric ulcers. The best formulation was found in formula 3.

Keywords: Green grass jelly, *Premna oblongifolia* Merr, Peptic Ulcer, Mucoadhesive Granules

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RADIOLABELING OF AM-Co USING IODINE-131 FOR RADIOPHARMACEUTICAL OF THERANOSTICS BREAST CANCER

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ABSTRACT

Drug molecules in nature, especially metals, offer a much wider variety of compounds and have important therapeutic applications[1]. Since the introduction of cisplatin (cis-dichlorodiammineplatinum(II), cisPt($Cl_2(NH_3)_2$) to oncology, especially in the treatment of advanced cancers, inorganic compounds have had a tremendous impact[2-4]. The activity of these metal complexes relies largely on specific interactions with DNA, which causes damage and eventually cell death. An organometallic complex compound derived from alpha mangostin has been successfully synthesized. The aim of this research is to make Bis-(-α-mangostin)-cobalt (II) (AM-Co) then radiolabeled with Iodine-131 as a potent radiopharmaceutical for breast cancer diagnosis and therapy. One of the selected methods for detecting cancer is nuclear techniques using radiopharmaceuticals. The synthesis method with iodine is known as the radioiodination process using Chloramine T (CAT) as an oxidator. Radiosynthesis optimization was carried out by varying the number of ligands, the amount of CAT, and the incubation temperature, then in vitro testing against human cell lines. The results showed that optimization of 131IAM-Co using 0.25 µg AM-Co, 0.5µg CAT, and 15 minutes of incubation at 4°C resulted in a radiochemical purity of 99.20%. The conclusion is that the compound 131IAM-Co was successfully made as a radiopharmaceutical product.

Keywords: Radiopharmaceuticals, Breast Cancer, Alpha Mangostin, organometallic complex

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MOLECULAR DOCKING STUDIES OF BIOACTIVE COMPOUNDS FROM KLUTUK BANANA (MUSA BALBISIANA COLLA) WITH PROTEINS PROMOTING ANTIBIOTIC RESISTANCE IN BACTERIAL AND FUNGAL PATHOGENS

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ABSTRACT

Fruit of klutuk banana (*Musa balbisiana* Colla) has long been used by Indonesian people to stop the diarrhea caused by the effect of dysentery and also fungal infections of the skin[1]. In this study, we used molecular docking methods to investigate the mechanism of inhibition of their main bioactive compounds (cholesta, cycloartenol, and cyclomusalenone) against the proteins responsible for antibiotic resistance in bacterial and fungal pathogens[2]. The target receptor plays a role in cytochrome P450 14-alpha-sterol demethylase, N-myristoyl transferase, and penicillin-binding protein 3 by using AutoDock Vina compared with the established control drugs. Swiss ADME servers were used for the determination of Lipinski rule of 5, and drug-likeness prediction respectively, whereas, admetSAR and Protox-II tools were used for toxicity prediction. Cyclomusalenone performed the best binding affinity value -6.0, -8.5, and -6,1 (kcal.mol^{-1}) compared than the control drugs (amphotericin B, erythromycin, and fluconazole) -5.3, -7.1, and -5.8 (kcal.mol^{-1}). All bioactive compounds are non-carcinogenic and non-cytotoxic by nature, and they all conform to the Lipinski rule. Based on these data, we recommend predicting the targets of bioactive compounds for testing antifungal activity in vitro and in vivo.

Keywords: *Musa balbisiana* Colla, molecular docking, binding affinity, amphotericin B, erythromycin, and fluconazole.

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IN SILICO IDENTIFICATION OF NATURAL PRODUCTS WITH ANTITUBERCULOSIS ACTIVITY FOR THE INHIBITION OF INHA AND ETHR PROTEINS FROM *MYCOBACTERIUM TUBERCULOSIS*

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ABSTRACT

The rise of *Mycobacterium tuberculosis* (MT) strains that are resistant to antibiotics, poses a serious threat to public health, particularly in middle and low-income countries[1]. There are a limited number of drugs that can be used to treat tuberculosis (TB), and multidrug-resistant TB strains are becoming increasingly prevalent. The important role of natural products (NPs) in the discovery of new drugs to treat infectious diseases is driving the success of synthetic chemistry in the production of new drugs. In our study, 15 NPs were selected to be investigated for their anti-TB properties by *in silico* method. Molecular reverse docking approach to predict the interaction of NPs as a drug lead against the regulatory proteins (InhA, EthR) of MT. For each mycobacterial target, the docking scores/binding free energies were predicted and calculated using AutoDock Vina along with the physicochemical and structural characteristics of the NPs, and they were compared to the established inhibitor (control) drugs. The specific interactions of aloe emodin, quercetin, genistein, andrographolide against the targets InhA and EthA (-6.2 and -4.8 kcal.mol^{-1}; -6.7 and -5.8 kcal.mol^{-1}; -4.9 and -6.2 kcal.mol^{-1}; -5.6 and -4.9 kcal.mol^{-1}) had significantly superior docking scores compared to controls. Our research proposed these compounds as potent therapeutic agents for the development of anti-tuberculosis medications, however, additional *in vitro* and *in vivo* testing is required to confirm their potential as novel therapeutics and mechanisms of action.

Keywords: Tuberculosis, *Mycobacterium tuberculosis*, multidrug resistance, antibiotic, natural products, reverse docking.

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CHITOSAN-BASED NANO SYSTEMS FOR NATURAL ANTIOXIDANTS IN BREAST CANCER THERAPY

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ABSTRACT

Breast cancer is a major cause of death globally[1]. Chemotherapy can increase oxidative stress[2]. Natural antioxidants can help mitigate oxidative stress, but their limited solubility reduces their effectiveness when taken orally increasing water solubility is a strategy to enhance their bioavailability[3]. Chitosan-based nanoparticle (CSNP) systems have been extensively explored due to their reliability and simpler synthesis routes. This review focuses on the various methods of chitosan-based nanoformulation for developing effective oral dosage forms for natural antioxidants based on the pharmacokinetics and pharmacodynamics properties. Chitosan (CS) could be a model, because of its wide use in polymeric NPs research, thus providing a better understanding of the role of vehicles that carry natural antioxidants in maintaining the stability and enhancing the performance of cancer drugs. CSNPs hold significant promise in oral drug delivery due to their unique properties and versatility. By carefully selecting the preparation method, CSNPs can enhance the efficacy of therapeutic agents in various areas, including antioxidant activity, anticancer activity, and pharmacokinetic properties enhancement.

Keywords: breast cancer; bioavailability; chitosan; oral drug delivery; pharmacokinetic; pharmacodynamic properties

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BEHAVIORAL TECHNOLOGY ACCEPTANCE MODEL IN HEALTH CARE INDUSTRY: SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

Researchers found the identification of problems from the ten research gap journals discussed, namely the absence of breadth and depth with other variables that will be tested on TAM and potential applications that can contribute, there must be refinement of the proposed model, there are still areas that can be expanded and improved to improve TAM predictive performance[1]. This research is a systematic literature review that discusses descriptively about the components of the Technology Acceptance model in health care and makes a conceptual framework in health care. Articles are taken from three databases, namely EBSCOhost, Proquest, Emerald with search limitations, namely academic journals, article format and in English. From 3,800 articles, 750 articles were obtained which will be screened with the appropriate title and abstract criteria. Based on the full text screening, 255 articles were obtained with the criteria of Research focus, unit of analysis, data collection unit, context, evidence based healthcare. After that, 52 final papers to be reviewed were obtained with details: Emerald 6 articles, Proquest 18 articles, EBSCOhost 28 articles. After reviewing 52 journals based on full content, systematic literature review and evidence based healthcare, the synthesized journals were 12 journals TAM has widespread application in explaining the technology acceptance model in the healthcare industry. The increase in the use of TAM appears to be justified by the many associations defined by TAM that apply in the health care industry setting[2]. Perhaps the most impressive is the relationship between external variables such as practical experience and skills on the usability of the connected health technologies which is influenced by trust and culture that results in the use of health applications in digital media[3].

Keywords: Conceptual Acceptance Frameworks, In health Care Industry, Technology Acceptance Model.

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QUALITY OF LIFE OF WARFARIN THERAPY PATIENTS USING THE DASS (DUKE ANTICOAGULATION SATISFACTION SCALE) IN DR. HASAN SADIKIN BANDUNG HOSPITAL

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ABSTRACT

Warfarin is an oral anticoagulant drug with a narrow therapeutic index, leading to individual variation in the necessary dosage. Furthermore, when using warfarin, it's important to implement lifestyle changes such as reducing physical activity, adjusting dietary habits, and being cautious with specific medications. These adjustments are necessary to mitigate the potential for warfarin's adverse effects, including the risk of bleeding[1]. Assessing the quality of life of patients undergoing warfarin treatment can be accomplished by examining INR values and utilizing quality of life questionnaires[2,3]. This study aimed to describe patient's quality of life using warfarin therapy at dr. Hasan Sadikin Central General Hospital and its relationship with demographic factors. The study was initiated by submitting a research permit, validating the Duke Anticoagulation Satisfaction Scale (DASS) questionnaire, filling out the questionnaire by respondents, and analyzing significant variables using the chi-square method for multivariate analysis. The results showed that the questionnaire was valid. Of 88 respondents, 52 had a scoring category <56.266 and 36 had a scoring category of $56.266 \leq x \leq 143.734$, and there were no patients with a scoring category > 143.734. Low education is at risk 4,916 times; age ≥ 52 years is at risk 3.161 times to have a quality of life score of $56.266 \leq x \leq 143.734$. It can be concluded that the average patient's quality of life score is 59.66; the lower the education and the older the age at risk to have a quality of life score of $56.266 \leq x \leq 143.734$.

Keywords: anticoagulant, questionnaire, INR, demographic factor

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ANTIBACTERIAL ACTIVITY TEST OF HERBAL AND NON HERBAL BAR SOAP AGAINST THE GROWTH OF *Staphylococcus aureus* ATCC29213

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ABSTRACT

The body has a protective function to prevent various kinds of external stimuli and damage, namely the skin. On human skin there are bacteria that can cause infection such as Staphylococcus aureus bacteria[2]. One product that can be used to maintain healthy skin is herbal and non-herbal bar soap. In herbal bar soap, the formulation comes from natural ingredients, while non-herbal soap has a special composition such as triclosan or triclocarban which functions as an antibacterial[3]. This research was conducted to prove that there are antibacterials in herbal and non-herbal bar soaps with different brands. The method used in this study was the paper disc method which was used to determine the activity of herbal and non herbal bar soaps as antibacterial with 5 concentrations namely 1.25%, 0.625%, 0.312%, 0.156%, 0.078% and clindamycin 300 mg as a positive control. The results of this study showed that all samples of the bar soap preparations studied had antibacterial activity against the growth of Staphylococcus aureus bacteria. The Minimum Inhibitory Concentration (MIC) of herbal bar soap and non-herbal soap against Staphylococcus aureus bacteria is found at a concentration of 0.078%. So that the comparison of the antibacterial effectiveness of herbal and non-herbal bar soaps is that non-herbal bar soaps are more effective in inhibiting the growth of Staphylococcus aureus bacteria, because at the smallest concentration non-herbal bar soaps have an average value of inhibition zone diameter that is larger than herbal soaps and all sample values its bacterial growth inhibition response (0-3 mm) is included in the weak category classification.

Keywords: Herbal and non herbal bar soap, Staphylococcus aureus, Antibacterial.

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FORMULATION AND IN VIVO PERMEATION TESTS OF KETOPROFEN PATCH

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ABSTRACT

Ketoprofen is one of the non-steroidal anti-inflammatory drugs group (NSAIDS), that threats osteoarthitis and rheumathoid arthritis[1]. Ketoprofen has been widely sold in various forms such as gels, suppositories, tablets, and capsules. However, it is noted that the ketoprofen have some disadvantages, especially if administered through the oral administration pathway, so transdermal patches of ketoprofen are formed to avoid such adverse effects[2,3]. Based on *in-vitro* research using a combination of PVP and ES matrices, the preparation of ketoprofen has good permeation activity to the skin. The research aimed to find out more about the dosage permeation activity with *in-vivo* tests on Wistar strain mice conducted for 24 hours from ketoprofen patch preparations with PVP and ES ratios of 3: 1(F1) and 1: 1 (F2). The C_{max} values of F1, F2, and reference preparations were 182.5, 171.5, and 185.9 ppm respectively. The C max values of F1, F2, and comparison preparations were 182.5 ppm 171.5 ppm 185.9 ppm respectively with the same t max value at the 6th hour. Blood levels of the reference preparations were higher than those of the two test preparations in the first 6 hours, but the test preparation had better activity at 8 to 24 hours. Based on the results, it concluded that the preparation has the prospect of being further developed into an anti-analgesic preparation with transdermal delivery.

Keyword: Ketoprofen, , Transdermal, Permeation, *In vivo*

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IN VIVO TERATOGENICITY STUDIES OF *PHYSALIS ANGULATA* LINN HERB ETHANOL EXTRACT

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ABSTRACT

The *Physalis angulata* Linn plant which in Indonesia is known as ciplukan has been widely used as a traditional medicine. The most well-known activity of this plant is anti-inflammatory[1] and anti-fibrotic[1,2]. In addition to proven efficacy, drug preparations must also be proven safe, including safety for pregnant women and their fetuses. Therefore, this study aimed to examine the teratogenicity of the ethanol extract of the *P. angulata* L. herb. The extract was made by maceration method using 70% ethanol as solvent. The teratogenicity test was carried out on pregnant Wistar rats, by administering the test extract orally every day during the organogenesis period, namely on the 6th to the 15th day at doses of 20, 45, and 1000 mg/kg BW. Observations were made on the parameters of the external condition of the fetus such as body weight and length, as well as the macroscopic abnormalities, and also the internal condition of the fetus including the soft tissue and skeleton. The results showed no abnormalities in observing the external condition, soft tissue and skeletal structure of the fetus. In conclusion, the administration of the ethanol extract of the *P. angulata* L. herb to the pregnant test animals was not cause severe toxic effects or defects in the fetus.

Keywords: *Physalis angulata*, herb, ciplukan, teratogenicity, *in vivo*

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THE EFFECT OF INFORMATION SYSTEM MANAGEMENT RECIPES SERVICES ON MEDICATION ERRORS IN FIRST LINE HEALTH FACILITY IN KARAWANG DISTRICT

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ABSTRACT

Medication error is a failure in the treatment process that has the potential to pose risks and must be avoided to improve patient safety and quality of services on health facility[1]. Development of information systems such as software integration on recipes service were used to prevent medication error. The study was aimed to investigate the correlation of the recipe completeness in administrative studies with medication error.The new information system software on recipes services (REKAM) were used on this observation, FMEA method were performed to reduce the Risk Priority Number (RPN) from analyses data of 200 written prescriptions and 200 electronic prescriptions (REKAM) obtained from general poly patient prescriptions at one of the First Level Facilities in Karawang Regency. The research design used was a cross-sectional design with retrospective data. The results showed that the number of significance increases at the prescription completeness in administrative studies was p <2.2e-16 which is less than 0.05, statistically significant between manual recipes and electronic prescriptions. Our data shows, With the use of Information Systems (REKAM), successfully to prevent and identify medication errors in health facilities.

Keywords: Medication Errors, FMEA, Analysis of prescription completeness, prescription administrative studies.

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