PROCEEDING BOOK OF

The 5th International Conference on Pharmaceutical Nanotechnology/Nanomedicine

"Application of Nanotechnology in Drugs, Cosmetics and Herbal Medicines Industries"

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Faculty of Pharmacy
Universitas Pancasila
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International Journal of Applied Pharmaceutics

PROCEEDING BOOK

The 5th International Conference on Pharmaceutical Nanotechnology/ Nanomedicine
"Application of Nanotechnology in Drugs, Cosmetics and Herbal Medicines Industries"

Saturday, 11th December 2021 (GMT+7)

Online International Conference

Faculty of Pharmacy, Universitas Pancasila, Jakarta, Indonesia

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Proceeding Book

The 5th International Conference on Pharmaceutical Nanotechnology/ Nanomedicine

"Application of Nanotechnology in Drugs, Cosmetics and Herbal Medicines Industries"

Jakarta, 15th Desember 2021

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LIST OF CONTENT

PREFACE

A. Introduction

The development of the cosmetic and herbal industry has now become a sector that is reliable enough to contribute greatly to the value of national exports and can encourage economic growth. The use of cosmetics and herbal medicinesin recent times has begun to increase, especially in Indonesia. The use of natural ingredients in cosmetics and medicine has increased because nowadays peoplehave tended to "back to nature" and have started to choose products made fromnatural ingredients. Common problems in cosmetics and herbal medicines are bioavailability, solubility, absorption of active substances, and low stability. To overcome this problem, the technology used for the formulation of cosmetics and herbal medicines is developed. One example is nanotechnology. Nanotechnologyis a technology where drug particles are made on the nanoscale (10 – 1000 nm). The use of nanotechnology is expected to overcome problems in natural ingredients-based preparations as well as increase the therapeutic effectand reduce toxicity. Examples of nanotechnology that can be used are polymer nanoparticles, solid lipid nanoparticles, magnetic nanoparticles, and others. Nanotechnology is made by using a suitable preparation method for each type of preparation of natural ingredients.

The cosmetic sector and herbal medicine preparations can become the new spearhead for the national economy. In the era of development and developmentof downstream products for cosmetic and herbal preparations using nanotechnology, the main goal is to design nanoparticles as a delivery system foractive substances in both cosmetic and drug preparations in terms of particle size, surface properties, and release of active substances to obtain specific actionsfrom the designed formulation desired. The Faculty of Pharmacy, Universitas Pancasila, as a forum for academics and researchers in the field of pharmaceutical technology intends to hold an international seminar.

The 5th International Conference on Pharmaceutical Nanotechnology raised the topic "Application of nanotechnology in cosmetics and herbal medicines industries" by inviting speakers from various backgrounds, including researchers, academia, industry, and government research institutions who are nanotechnology experts. The purpose of this activity is to improve the quality of research in the field of cosmetic products and herbal medicines to achieve downstreaming.

The second objective is to strengthen collaboration between academia, industry, and government in the downstream use of nanotechnology. In addition, in line with the Tri Dharma of Higher Education as a follow-up to the research outputs, academics are required to be able to publish their research results so that their reputation as a researcher increases. One of the important stages in the publication process is the dissemination of

research results through seminars or conferences at the national level. The participation of research participants in national seminars and conferences can open up opportunities for scientific publications in proceedings and journals that have good reputations at the national level. Through this webinar, it is hoped that researchers and stakeholders (industry and government) can exchange information so that they can gain insight and maturity in scientific thinking

B. Purpose

As a means of exchanging ideas with experts in the field of nanotechnology regarding the current state of knowledge of the development and application of nanotechnology in cosmetic preparations and herbal medicines.

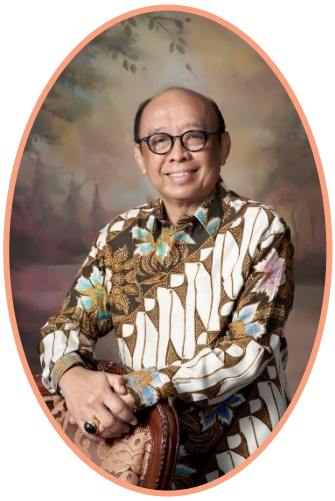
C. Time and Date

Day/Date	: **Saturday, 11th December 2021**
Time	: **08.00-15.30 WIB**
Platform	: **Zoom Meeting**

D. Participants

1. Pharmacists who work in various health facilities, both the pharmaceuticalindustry and hospitals.
2. Academics from the Department/Faculty of Pharmacy/Health Sciences Clump
3. Formulation and Nanotechnology researchers
4. Stakeholders in the Ministry of Health, Health Office, and National Food and Drug Agency of Indonesia (BPOM)
5. Students of undergraduate, graduate, doctoral program pharmacy and the pharmacist profession)
6. Community of activists in developing science and application of nanotechnology-based preparations

OPENING SPEECH RECTOR OF UNIVERSITAS PANCASILA



Good morning
Assalamualaikum Warohmatullah Wabarokatuh

Ladies and Gentlemen, allow me in this opportunity to welcome all of these conference participants by first praying our gratitude and praise to the Almighty God for all His blessings, grace, and mercies that have made us possible to gather here in this room in excellent condition and health.

Welcome joining this seminar. I am very glad to welcome you to this 5th International Conference on Pharmaceutical Nanotechnology/ Nanomedicine with the theme “Application of Nanotechnology in Drugs, Cosmetics, and Herbal Medicines”.

Universitas Pancasila is a private university with an A classification. This University was established with a vision to serve society in solving problems and challenges at the national and global levels, towards excellence in Southeast Asia. One of our missions is organizing quality activities in the pharmaceutical sector and relevant to national and global challenges, such as this conference. This conference was started in 2013, and I as the rector will always support it as a part of our commitments to the vision. This seminar is very important.

Thank you to Prof. Dr. Shirly Kumala and the committee that have organized this important international event valuable not only for Universitas Pancasila but also for other universities and researchers.

As mentioned by the committee, this year we are fortunate that the participants from various countries in Asia, such as China, Taiwan, and Malaysia including Indonesia. They will be 26 oral presenters, 24 poster presenters, more of 50 general participants. The committee has also prepared some local and international journals for publishing the presented articles.

I hope all participants are enjoying this conference and gaining valuable information. Finally, by saying “BISMILLAH, Bismillahirrohmanirrohim”, I declare that the conference is opened. Have a good day!

Thank You!

Wassalamu’alaikum Warohmatullahi Wabarokatuh
Rector of Universitas Pancasila

Prof. Dr. Edie Toet Hendratno, S.H., M.Si, FCBArb

WELCOME SPEECH DEAN OF FACULTY OF PHARMACY

Good morning Ladies and Gentlemen,
Assalamu'alaikum Warohmatullahi Wabarokatuh

It is an honor and privilege for me to welcome all of you, the honorable speakers and participants from the various universities and institutions to attend this conference. Furthermore, we are so delighted to present the 5th International Conference on Pharmaceutical Nanotechnology with the theme "Application of nanotechnology in drugs, cosmetics, and herbal medicine."

I realize that you have been fully dedicated to the development of Pharmaceutical nanotechnology. Hence the development of the cosmetic and herbal industry has now become an important sector that is pretty reliable to contribute greatly to the value of national exports and it can encourage worldwide economic growth.

In addition, the conference could generate a productive dialogue among scientists in enriching their knowledge and expertise in nanotechnology. Moreover, the conference provides an invaluable opportunity for networking between institutions. I am so pleased to note that the Faculty of Pharmacy, Universitas Pancasila can cooperate with other institutions and other countries.

We do expect to hold this conference again next two year and are so elated that delegates coming from various occupations are also in attendance in this challenging event, in particular, the speakers from Shanghai China, Taiwan, Malaysia, and ITB who are now present to impart their expertise to the participants.

Please allow me to highlight that the Faculty of Pharmacy Universitas Pancasila is giving strong emphasis on the development of nanotechnology to develop associated researches. Speaking about researches, I would like to emphasize the importance of cosmetic and herbal industry development as the cosmetic industry and herbal medicine preparations can become the new spearhead for the national economy.

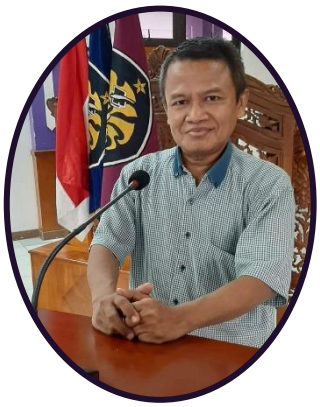
I wish the participants have a very fruitful session

Thank you.
Dean Faculty of Pharmacy

Prof. Dr. Shirly Kumala, M.Biomed

OPENING SPEECH CHAIRMAN OF COMMITTEE

Assalamu'alaikum Warohmatullahi Wabarokatuh,



Ladies and Gentlemen, allow me in this opportunity to welcome all of these conference participants by first praying our gratitude and praise to the Almighty God for all His blessings, grace, and mercies that have made us possible to gather here in this room in excellent condition and health.

Today, it gives me immense pleasure in welcoming all of you to this 5th International Conference on Pharmaceutical Nanotechnology /Nanomedicine with the theme "Application of Nanotechnology in Drugs, Cosmetics, and Herbal Medicines".

Our faculty was established with a vision to serve society in solving problems and challenges at the national and global levels, towards excellence in Southeast Asia. One of our missions is organizing quality activities in the pharmaceutical sector and relevant to national and global challenges, such as this conference. This conference was started in 2013, and we will continue it as a part of our commitments to the vision.

Please allow me to thank Prof. Dr. Edie Toet Hendratno and Prof. Dr. Shirly Kumala that have given the committee valuable experience to organize this international event.

This year we are lucky to have with us five honorable speakers whom we have no hesitation in describing as exceptional, and it is an honor for us to welcome. They are from four countries in Asia, such as China, Taiwan, and Malaysia including Indonesia. We also provide some local and international journals for publishing the presented articles.

Moreover, it is not complete without allowing me to thank all the committee members who have contributed their efforts so that this conference can be held, also other people that cannot be explained one by one.

Finally, I hope you have an engaging and enriching session ahead.

Thank You!
Wassalamu 'alaikum Warohmatullahi Wabarokatuh
Chairman

Drs. apt. Kosasih, M.Sc

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"Application of Nanotechnology in Drugs, Cosmetics and Herbal Medicines Industries"

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The 5th International Conference on Pharmaceutical Nanotechnology
"Application of Nanotechnology in Drugs, Cosmetics and Herbal Medicines Industries"

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RUNDOWN

The 5th International Conference on Pharmaceutical Nanotechnology/Nanomedicine
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Date : Saturday, December 11th 2021
Time : 07:30 – 15:30 WIB

No	Time (WIB)	Duration (minutes)	Agenda
			Advertisement from PT. Kino Indonesia
1.	07:00 - 07:30	30	Committee Preparation
2.	07:30 - 07:55	25	Participants join and fill the attendance's list
3.	08:00 - 08:15	15	Opening Ceremony Indonesia Raya and Hymne Universitas Pancasila songs
			Ads lips sponsor from MC
4.	08:15-08:20	5	Chairman Committee Report **apt. Drs. Kosasih, M.Sc.**
5.	08:20-08:25	5	Welcoming Speech from Rector of Pharmacy Universitas Pancasila **Prof. Dr. Edie Toet Hendratno,S.H., M.Si., FCBArb.**
6.	08:25 –08:30	5	Welcoming Speech and opening remarks from Dean of Faculty of Pharmacy Universitas Pancasila **(Prof. Dr. Shirly Kumala, M.Biomed)**
7.	08:30 - 08:35		**Photo Sesion**
8.	08:35 –08:40	5	Curriculum Vitae of Moderator 1 (**Kevin Ben Laurence, RPh.)** (Director, International Pharmaceutical Federation (FIP) Foundation for Education and Research)
9.	08:40 –09:10	30	Keynote Speaker : **Dr Chun-Wai MAI, CSci, Ph.D., BPharm (Hons)** (Shanghai Jiao Tong University, Shanghai, China)
10.	09:10 –09:40	30	Keynote Speaker : **Canggih Setya Budi, Ph.D.** (Department of Chemistry, National Central University Taiwan (R.O.C))
11.	09:40 –09:50	10	Q & A
12.	09:50 –09:55	5	Curriculum Vitae of Moderator 2 (**apt. Hesty Utami Ramadaniati, M.Clin Pharm., Ph.D.)**
13.	10:00 –10:30	30	Plenary Lecture 1: **Prof. Dr. apt. Heni Rachmawati, M.Si.** (Sekolah Farmasi, Institut Teknologi Bandung (ITB))

14.	10:30 –11:00	30	Plenary Lecture 2: **Prof. Dr. apt. Effionora Anwar, M.S.** (Universitas Pancasila)
15.	11:00 –11:30	30	Keynote Speaker : **Goh Choon Fu, BPharm, Ph.D., RPh** (Universiti Sains Malaysia, Penang, Malaysia
16.	11:30 –11:45	15	Q & A
			Ads lips sponsor from MC
15.	11:45 –12:00	15	Announcement of Oral and Poster Schedule
16.	12:00 –13:00	60	Break time
			Video Advertisement from PT. Kino Indonesia
17.	13:00 –13.15	15	Distribution of Oral and Poster Presentation participants in break out room zoom
18.	13:15 –16:45	210	Oral and Poster Presentation Session
19.	16:45 –16:55	10	Announcement of Winners for Oral and Poster Presentation
20	16:55 - 17:00	5	Closing ceremony
			Ads lips sponsor from MC

RUNDOWN OF ORAL AND POSTER PRESENTER

The 5th International Conference on Pharmaceutical Nanotechnology/Nanomedicine
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13.00 – 15.00	Break out room Oral Presentation Room A : Biology pharmacy & traditional medicine	Moderator: Andrea Angelica Reviewer: apt. Diah Kartika Pratami, M.Farm
	Break out room Oral Presentation Room B : Technology pharmacy	Moderator: apt. Zainur Rahman Hakim, M. Farm Reviewer: Prof. Dr. apt. Effionora Anwar
	Break out room Oral Presentation Room C : Pharmacology, Social pharmacy, Pharmaceutical Chemistry	Moderator: apt. Intan Permata Sari, M.Farm Reviewer: 1. Prof. Dr. apt. Shirly Kumala, M.Biomed 2. Esti Mulatsari, M.Sc
13.00 – 15.00	Main Room: Poster presentation	Moderator: Kezia Giventy Board of Judges: 1. apt.Sarah Zaidan, M.Farm 2. apt. Safira Nafisa, M.Si 3.apt.Rahmatul Qodriah,M.Farm 4. apt. Desi Nadya Aulena, M.Farm.

Oral Presentation

NO	Full Name	Affiliation	Abstract Title	Room	Time
1	Erna Tri Wulandari	Fakultas Farmasi Universitas Sanata Dharma Yogyakarta	Potential Inhibitory Effect of Xanthine Oxidase Enzyme by Combination of Salam folium (Syzygium polyanthum L) and Sisik naga (Pyyrrosia pilleseloides L MG Price) Extract	A1	13.15-13.25
2	Yeni	Universitas Muhammadiyah Prof. DR. HAMKA	Prediction of Pharmacokinetic Properties OF Compounds in *Hemigraphis Alternata* (BURM.F.) T. Ander Leaves Using PKCSM	A2	13.26-13.36
3	Safira Candra Asih	Universitas Indonesia	The Role of *Propolis Tetragonula* sp in Oxidative Stress and Protective Effect against UV Radiation on Human Cells	A3	13.37-13.47

NO	Full Name	Affiliation	Abstract Title	Room	Time
4	Shirly Kumala	Universitas Pancasila	Evaluation of Microbiological Contamination Parameters of Traditional Medicinal Preparations Containing Red Ginger	A4	13.48-13.58
5	Sarah Zaidan	Universitas Pancasila	Antioxidant Activity of Brown Seaweed (*Sargassum Polycystum*) Nanoparticles Extract in Rats Fed High Fat Diet	A5	13.59-14.09
6	Etin Rohmatin	Tasikmalaya Health Polytechnic	Topical Effect of Tetragonula sapiens Honey on the Healing Process of Post-Caesarean Section Wounds	A6	14.10-14.20
7	Wiwin Mintarsih	Tasikmalaya Health Polytechnic	The Role of Red Ginger and Warm Water in Relieving Labour Pain	A7	14.21-14.31
8	Etin Rohmatin	Tasikmalaya Health Polytechnic	Propolis as an Alternative to Increase Hemoglobin Levels in Anemic Adolescent Girls	A8	14.32-14.42
9	Benni Iskandar	STIFAR Riau	Formulation and Activity Test of Sunflower Seed Oil Liquid Soap as Anti Acne	B1	13.15-13.25
10	apt, Yudi Srifiana, M.Farm.	Faculty Of Pharmacy and Sciences UHAMKA	Formulation and Diffusion Test Of Curcumin Dendrimer Using Polyamido Amin (PAMAM)G4 Conjugated Polyetylene Glicol (PEG) As A Form of Dendrimer	B2	13.26-13.36
11	Nur Alam Abdullah	Dinas Kesehatan Kabupaten Nabire Papua	Formulation and Evaluation of Topical Nanoemulsion Preparations N-Hexan Extract of Itch Leaves (*Laportea decumana* Roxb L)	B3	13.37-13.47
12	Dina Permata Wijaya, S.Far, M.Si., Apt.	Universitas Sriwijaya	Formulation and Characterization of Transdermal Film Jackfruit leaves (*Artocarpus heterophyllus* Lamk) Extract	B4	13.48-13.58
13	Januar Akbar Ramadhan	Universitas Pancasila	Formulation Gel Self Nanoemulsifying Drug Delivery System (SNEDDS) Alpha-Bisabolol as Antioxidant	B5	13.59-14.09
14	Kartiningsih	Faculty of Pharmacy Universitas Pancasila	Formulation In Tablet Form of Nanoparticles Fucoidan Crude From Extract Brown Seaweed (*Sargassum polycystum*) as Antioxidant	B6	14.10-14.20

NO	Full Name	Affiliation	Abstract Title	Room	Time
15	Amelia Nursafitri	Faculty of Pharmacy Universitas Pancasila	Formulation and Evaluation of Citronella Oil in Roll On Apllication System	B7	14.21-14.31
16	Yulius Evan Christian	Faculty of Pharmacy Universitas Pancasila	Formulation of Cantigi Leaf Extract Nanoemulgel (*Vaccinium varingiaefolium Miq.*) as An Antioxidant	B8	14.32-14.42
17	Joti	Faculty of Pharmacy Universitas Pancasila	Formulation and Evaluation of Red Ginger Oil (*Zingiber officinale Roscoe*) Balm as An Analgesic	B9	14.43-14.53
18	apt.Syilfia Hasti,M.Farm	Sekolah Tinggi Ilmu Farmasi Riau	Subchronic Toxicity of *Ipomoea batatas (L.) Lam* Leaves Ethanol Extract on Kidney Function of White Mice (*Mus musculus L.*)	C1	13.15-13.25
19	Vitri Agustiarini, M. Farm.,Apt	Sriwijaya University	Second Degree Burn Wound Healing Activity Test of Ethanol Extract Mahogany Bark (*Swietenia mahagoni* (L.) Jacq.)	C2	13.26-13.36
20	Herlina	Jurusan Farmasi Universitas Sriwijaya	Antidiarrheal Activity of Extract Ethanol Melinjo Leaves (*Gnetum Gnemon* L. (Linn.)) in Wistar Male White Rats Induced by *Escherichia Coli* and Extract Standardization	C3	13.37-13.47
21	dr. Johana Fitriani, MFarm.	Apotek dr. Jo	The Impact of Product Quality and Service Treatment Quality to Satification and Loyality of Patient in Beauty Clinic Bekasi City	C4	13.48-13.58
22	Safira Candra Asih	Universitas Indonesia	Preliminary study for COVID-19 drug discovery of 30 Phytochemical Compounds from Tetragonula Sp. Propolis as PAK1 Inhibitor Through Molecular Docking	C5	13.59-14.09
23	Nur Annisa Luthfiyah Ahlam	Universitas Indonesia	Identification and Authentication of Honey Using Chemometric Analysis Based on ATR-FTIR and Raman Spectroscopy	C6	14.10-14.20
24	HERYANTO SLAMET	Universitas Pancasila	In Silico Prediction of Essential Oil from Cymbopogon nardus as Immunomodulator in Rheumatoid Artritis	C7	14.21-14.31

NO	Full Name	Affiliation	Abstract Title	Room	Time
25	Fajri Rifaldi	Universitas Pancasila	Molecular Docking of Cymbopogon nardus as Compounds as A Protease Inhibitor of SARS-COV-2	C8	14.32-14.42

Poster Presentation

NO	Full Name	Affiliation	Abstract Title	Room
1	Nadia Putri Rachmawati	Faculty of Pharmacy Universitas Pancasila	The Use of Internet-Based Information Media by Pharmacist in South Jakarta in Provision of Pharmaceutical Services During Covid-19 Pandemic	Main Room PP1
2	Hafiz Ramadhan	STIKES Borneo Lestari	The antioxidant-anticancer in silico of phenolics and flavonoids from *Mangifera species* using molecular docking PLANTS	Main Room PP2
3	Dyera Forestryana	STIKES Borneo Lestari	Development of Liquid Crystal Nanoparticle Gel-Loaded Binjai Leaf (*Mangifera Caesia* J.) of Methanol Extract	Main Room PP3
4	Hetty Lendora Maha	Universitas Sumatera Utara	Formulation and Test Antibacterial Activity of Nanoparticles Ethanol Extract of Tin Leaves (*Ficus carica* Linn.) ON *Staphylococcus aureus, Bacillus subtilis, Pseudomonas auroginosa, Eschercia coli AND Candida albicans*	Main Room PP4
5	Dr. apt. Yesi Desmiaty	Universitas Pancasila	Review article: The Potential of Natural Products in inhibiting Premature Skin Aging	Main Room PP5
6	T. Ismanelly Hanum	Pharmacy, Universitas Sumatera Utara	Physical Evaluation of Nanoemulgel Aand Emulgel Dosage Form Containing Ethanolic Extract of Kersen (Muntingia calabura L) Leaves : A Comparative Study	Main Room PP6
7	Lia Laila	Faculty of Pharmacy, Universitas Sumatera Utara	The Physical Characterization Comparison Between Clove Oil Nanoemulsion With And Without Catharanthus roseus (L) G. Don Extract And Their Antioxidant Activities	Main Room PP7
8	Fitri Yuniarti, M.Si	UHAMKA	Screening Anti-Bacterial Activity and Molecular Identification of Lactic Acid Bacteria (Lab) From Fermented Cabbage (*Brassica oleracea* L.) Against *Shigella dysenteriae* Pathogen Bacteria	Main Room PP8

NO	Full Name	Affiliation	Abstract Title	Room
9	dr. Selly Karlina, M.Farm.	Magister Farmasi, Universitas Pancasila	The Formulation of Nanoemulsion Serum Containing Pegagan Extract (*Centella Aasiatic*a L. Urban) And Chia Seed Oil (*Salvia hispanica*) for Skin Hydration Effect	Main Room PP9
10	apt. Dela Amalia Putri, M. Farm	Universitas Pancasila	Organic Lip Cream Formulation With Beet Root (Beta *vulgaris* L) Coloring and Chia Seed Oil (*Salvia hispanica*) Moisturizer	Main Room PP10
11	Liliek Nurhidayati	Universitas Pancasila	Characterization, FTIR Spectra Profile And Platelet Anti-Aggregation Activity Of Crude Fucoidan From *Sargassum crassifolium*	Main Room PP11
12	Dr.apt. Rini Prastiwi, M.Si.	Universitas Muhammadiyah Prof.Dr. HAMKA	Antihypertensive and Antioxidant Activities Of *Cnidoscolus aconitifolius* (Mill.) I. M. Johnst. Leaves	Main Room PP12
13	Dr. apt. Faizatun, M.Si	Faculty of Pharmacy, Universitas Pancasila	*Moringa oleifera* Extract- Loaded Nanostructured Lipid Carrier Gel: Formulation, Characterization And Anticollagenase Activity Evaluation	Main Room PP13
14	Dr. apt Ni Made Dwi Sandhiutami, S.Si., M.Kes.	Faculty of Pharmacy Universitas Pancasila	Anti-Inflammatory And Analgesic Activity of *Musa acuminata* x *Musa balbisiana* Peel In Vivo	Main Room PP14
15	Linda Fitriyani	Universitas Pancasila	Nanopartikel Gelasi Ionik Ekstrak Kulit Batang Pohon Tin	Main Room PP15
16	apt. Dra. Faridah, M.Si.	Universitas Pancasila	Virtual Screening Of Chlorogenic Acid And Its Derivatives On Ghrelin Receptors As Antiobesity	Main Room PP16
17	Yunahara Farida	Faculty Pharmacy, Universitas Pancasila	Quality Parameters and Determination of Total Flavonoid Levels From the Highest Antioxidant Activity Of Ethanol 70% Extract Jackfruit Peel (*Artocarpus heterophyllus* L.) by Maceration, Reflux, And Ultrasonic Methods	Main Room PP17
18	Dr. Neneng Siti Silfi Ambarwati, M.Si., Apt.	Universitas Negeri Jakarta	Isolation, Identification, And Antibacterial Activity of Amentoflavone From *Garcinia latissima* Miq. Leaves	Main Room PP18
19	Deni Rahmat	Universitas Pancasila	Nanoparticles Conditioned Medium Adipose Tissue Mesenchymal Stem Cell (Cm-Atmsc)	Main Room PP19

NO	Full Name	Affiliation	Abstract Title	Room
20	Lusiana Ariani	Universitas Pancasila	*In Vitro* Evaluation of Antioxidant And Anti-Elastase Of *Baccaurea macrocarpa* And *Terminalia catappa* Leaves And Bark	Main Room PP20
21	Fitria Malta	Universitas Pancasila	Applying Nanoparticle Technology In Making Standardized Extract Of African Leaves (*Vernonia amygdalina* Del.) To Lower Blood Glucose Level By In Vivo	Main Room PP21
22	Agus Purwanggana	Universitas Pancasila	Analysis of Multidrug Resistant Tuberculosis Risk Factors At Regional Public Hospital Of Surakarta Period 2017-2019	Main Room PP22
23	Esti Mulatsari	Universitas Pancasila	Synthesis And Characterization of Chitosan From Crab Shell Waste And Its Applications As Edible Coating To Increase Fruit Shelf Life	Main Room PP23
24	Ratna Djamil	Universitas Pancasila	Inhibition A-Glucosidase Enzyme The Extract And Nanoparticles Of Kembang Bulan Leaf (*Tithonia diversivolia* (Hamsley) A. Gray) *In Vitro*	Main Room PP24
25	Novi Yantih	Universitas Pancasila	Immunomodulator Activity of *Ziziphus spina-christi* L. Leaf Extracts Based On Phagocytosis Activity In Rats	Main Room PP25
26	Deni Rahmat	Faculty of Pharmacy, Universitas Pancasila	Microencapsulation Of Indonesian Polymer Biodiversity In Warthon's Jelly Mesenchymal Stem Cell (WJMSC)	Main Room PP26

ORAL PRESENTER

No	Presenter	Full Name	Title
1	Oral Presenter 01	Erna Tri Wulandari Fakultas Farmasi Universitas Sanata Dharma Yogyakarta	Potential Inhibitory Effect of Xanthine Oxidase Enzyme by Combination of Salam folium (*Syzygium polyanthum* L) and Sisik naga (*Pyyrrosia pilleseloides* L MG Price) Extract
2	Oral Presenter 02	Benni Iskandar STIFAR Riau	Formulation and Activity Test of Sunflower Seed Oil Liquid Soap as Anti Acne
3	Oral Presenter 03	Yudi Srifiana Faculty of Pharmacy and Sciences UHAMKA	Formulation and Diffusion Test of Curcumin Dendrimer Using Polyamido Amin (PAMAM) G4 Conjugated Polyetylene Glicol (PEG) as a Form Of Dendrimer
4	Oral Presenter 04	Yeni Universitas Muhammadiyah Prof. DR. HAMKA	Prediction of Pharmacokinetic Properties of Compounds in *Hemigraphis alternata* (Burm.F.) T. Ander Leaves Using PKCSM
5	Oral Presenter 05	Safira Candra Asih Universitas Indonesia	The Role of Propolis *Tetragonula sp* in Oxidative Stress and Protective Effect against UV Radiation on Human Cells
6	Oral Presenter 06	Safira Candra Asih Universitas Indonesia	Preliminary study for COVID-19 drug discovery of 30 Phytochemical Compounds from *Tetragonula sp.* Propolis as PAK1 Inhibitor Through Molecular Docking
7	Oral Presenter 07	Nur Annisa Luthfiyah Ahlam Universitas Indonesia	Identification and Authentication of Honey Using Chemometric Analysis Based on ATR-FTIR and Raman Spectroscopy
8	Oral Presenter 08	Nur Alam Abdullah Dinas Kesehatan Kabupaten Nabire Papua	Formulation and Evaluation of Topical Nanoemulsion Preparations N-Hexan Extract of Itch Leaves (*Laportea decumana* Roxb L)
9	Oral Presenter 09	Syilfia Hasti Sekolah Tinggi Ilmu Farmasi Riau	Subchronic Toxicity of *(Ipomoea batatas* (L.) Lam) Leaves Ethanol Extract on Kidney Function of White Mice (*Mus* musculus L.)
10	Oral Presenter 10	Dina Permata Wijaya Sriwijaya University	Formulation and Characterization of Transdermal Film Jackfruit leaves (*Artocarpus heterophyllus* Lamk) Extract
11	Oral Presenter 11	Vitri Agustiarini Sriwijaya University	Second Degree Burn Wound Healing Activity Test of Ethanol Extract Mahogany Bark (*Swietenia mahagoni* (L.) Jacq.)
12	Oral Presenter 12	Herlina Jurusan Farmasi Universitas Sriwijaya	Antidiarrheal Activity of Extract Ethanol Melinjo Leaves (*Gnetum Gnemon* L. (Linn.)) in Wistar Male White Rats Induced by *Escherichia coli* and Extract Standardization

No	Presenter	Full Name	Title
13	Oral Presenter 13	Heryanto Slamet Faculty of Pharmacy, Universitas Pancasila	In Silico Prediction of Essentsials Oil from *Cymbopogon nardus* As Immunomodulator In Rheumatoid Artritis
14	Oral Presenter 14	Shirly Kumala Faculty of Pharmacy, Universitas Pancasila	Evaluaton Of Microbiological Contamination Parameters of Traditional Medicinal Preparations Containing Red Ginger
15	Oral Presenter 15	Fajri Rifaldi Faculty of Pharmacy, Universitas Pancasila	Molecular Docking of *Cymbopogon nardus* Compounds as A Protease Inhibitor Of SARS-COV-2
16	Oral Presenter 16	Yulius Evan Christian Faculty of Pharmacy, Universitas Pancasila	Formulation of Cantigi Leaf Extract Nanoemulgel (*Vaccinium varingiaefolium* Miq.) as an Antioxidant
17	Oral Presenter 17	Januar Akbar Ramadhan Faculty of Pharmacy, Universitas Pancasila	Formulation Gel Self Nanoemulsifying Drug Delivery System (SNEDDS) Alpha-Bisabolol as Antioxidant
18	Oral Presenter 18	Sarah Zaidan Faculty of Pharmacy, Universitas Pancasila	Antioxidant Activity of Brown Seaweed (*Sargassum polycystum)* Nanoparticles Extract in Rats Fed High Fat Diet
19	Oral Presenter 19	Johana Fitriani Apotek dr. Jo	The Impact of Product Quality and Service Treatment Quality to Satification and Loyality of Patient In Beauty Clinic Bekasi City
20	Oral Presenter 20	Joti Faculty of Pharmacy, Universitas Pancasila	Formulation and Evaluation of Red Ginger Oil (*Zingiber officinale* Roscoe) Balm as an Analgesic
21	Oral Presenter 21	Kartiningsih Faculty of Pharmacy, Universitas Pancasila	Formulation in Tablet Form of Nanoparticles Fucoidan Crude from Extract Brown Seaweed (*Sargassum polycystum)* as Antioxidant
22	Oral Presenter 22	Amelia Nursafitri Faculty of Pharmacy, Universitas Pancasila	Formulation And Evaluation of Citronella Oil In Roll On Application System
23	Oral Presenter 23	Etin Rohmatin Tasikmalaya Health Polytechnic	Topical Effect of Tetragonula Sapiens Honey on The Healing Process of Post-Caesarean Section Wounds
24	Oral Presenter 24	Wiwin Mintarsih Tasikmalaya Health Polytechnic	The Role of Red Ginger and Warm Water In Relieving Labour Pain
25	Oral Presenter 25	Etin Rohmatin Tasikmalaya Health Polytechnic	Propolis as an Alternative To Increase Hemoglobin Levels in Anemic Adolescent Girls

POSTER PRESENTER

No	Presenter	Full Name	Title
1	Poster Presenter 01	Nadia Putri Rachmawati Faculty of Pharmacy, Universitas Pancasila	The Use of Internet-Based Information Media by Pharmacist in South Jakarta in Provision of Pharmaceutical Services During Covid-19 Pandemic
2	Poster Presenter 02	Hafiz Ramadhan STIKES Borneo Lestari	The Antioxidant-Anticancer In Silico of Phenolics and Flavonoids from *Mangifera species* Using Molecular Docking Plants
3	Poster Presenter 03	Dyera Forestryana STIKES Borneo Lestari	Development of Liquid Crystal Nanoparticle Gel-Loaded Binjai Leaf (*Mangifera caesia* J.) of Methanol Extract
4	Poster Presenter 04	Hetty Lendora Maha Universitas Sumatera Utara	Formulation and Test Antibacterial Activity of Nanoparticles Ethanol Extract of Tin Leaves (*Ficus carica* Linn.) on *Staphylococcus aureus, Bacillus subtilis*, *Pseudomonas auroginosa*, *Eschercia coli,* and *Candida albicans*
5	Poster Presenter 05	Yesi Desmiaty Faculty of Pharmacy, Universitas Pancasila	Review Article: The Potential of Natural Products In Inhibiting Premature Skin Aging
6	Poster Presenter 06	T. Ismanelly Hanum Faculty of Pharmacy, Universitas Sumatera Utara	Physical Evaluation of Nanoemulgel and Emulgel Dosage form Containing Ethanolic Extract of Kersen (*Muntingia calabura* L) Leaves : A Comparative Study
7	Poster Presenter 07	Lia Laila Faculty of Pharmacy, Universitas Sumatera Utara	The Physical Characterization Comparison Between Clove Oil Nanoemulsion with and without *Catharanthus roseus* (L) G. Don Extract and Their Antioxidant Activities
8	Poster Presenter 08	Fitri Yuniarti Universitas Muhammadiyah Prof.Dr. HAMKA	Screening Anti-Bacterial Activity and Molecular Identification of Lactic Acid Bacteria (LAB) from Fermented Cabbage (*Brassica oleracea* L.) against *Shigella dysenteriae* Pathogen Bacteria
9	Poster Presenter 09	Selly Karlina Faculty of Pharmacy, Universitas Pancasila	The Formulation of Nanoemulsion Serum Containing Pegagan Extract (*Centella asiatica* L. Urban) and Chia Seed Oil (*Salvia hispanica*) for Skin Hydration Effect
10	Poster Presenter 10	Dela Amalia Putri Faculty of Pharmacy, Universitas Pancasila	Organic Lip Cream Formulation with Beet Root (*Beta vulgaris* L) Coloring and Chia Seed Oil (*Salvia hispanica*) Moisturizer
11	Poster Presenter 11	Liliek Nurhidayati Faculty of Pharmacy, Universitas Pancasila	Characterization, FTIR Spectra Profile and Platelet Anti-Aggregation Activity of Crude Fucoidan from *Sargassum crassifolium*
12	Poster Presenter 12	Rini Prastiwi Universitas Muhammadiyah Prof.Dr. HAMKA	Antihypertensive and Antioxidant Activities of *Cnidoscolus aconitifolius* (Mill.) I. M. Johnst. Leaves
13	Poster Presenter 13	Faizatun Faculty of Pharmacy, Universitas Pancasila	*Moringa oleifera* Extract- Loaded Nanostructured Lipid Carrier Gel: Formulation, Characterization and Anticollagenase Activity Evaluation

14	Poster Presenter 14	Ni Made Dwi Sandhiutami Faculty of Pharmacy, Universitas Pancasila	Anti-Inflammatory and Analgesic Activity of *Musa acuminata* X *Musa balbisiana* Peel In Vivo
15	Poster Presenter 15	Linda Fitriyani Faculty of Pharmacy, Universitas Pancasila	Ionic Gelated Nanoparticles Extract of Tin Tree Bark (*Ficus carica* L)
16	Poster Presenter 16	Faridah Faculty of Pharmacy, Universitas Pancasila	Virtual Screening of Chlorogenic Acid and Its Derivatives on Ghrelin Receptors as Antiobesity
17	Poster Presenter 17	Yunahara Farida Faculty of Pharmacy, Universitas Pancasila	Quality Parameters and Determination of Total Flavonoid Levels from the Highest Antioxidant Activity of Ethanol 70% Extract Jackfruit Peel (*Artocarpus heterophyllus* L.) by Maceration, Reflux, and Ultrasonic Methods
18	Poster Presenter 18	Neneng Siti Silfi Ambarwati Universitas Negeri Jakarta	Isolation, Identification, and Antibacterial Activity of Amentoflavone from *Garcinia latissima* Miq. Leaves
19	Poster Presenter 19	Deni Rahmat Faculty of Pharmacy, Universitas Pancasila	Nanoparticles Conditioned Medium Adipose Tissue Mesenchymal Stem Cell (Cm-Atmsc)
20	Poster Presenter 20	Lusiana Ariani Faculty of Pharmacy, Universitas Pancasila	In-Vitro Evaluation of Antioxidant and Anti-Elastase of *Baccaurea macrocarpa* and *Terminalia catappa* Leaves and Bark
21	Poster Presenter 21	Fitria Malta Faculty of Pharmacy, Universitas Pancasila	Applying Nanoparticle Technology in Making Standardized Extract of African Leaves (*Vernonia amygdalina* Del.) to Lower Blood Glucose Level by in vivo
22	Poster Presenter 22	Agus Purwanggana Faculty of Pharmacy, Universitas Pancasila	Analysis of Multidrug Resistant Tuberculosis Risk Factors at Regional Public Hospital of Surakarta Period 2017-2019
23	Poster Presenter 23	Esti Mulatsari Faculty of Pharmacy, Universitas Pancasila	Synthesis and Characterization of Chitosan from Craft Shell Waste and Its Applications as Edible Coating to Increase Fruit Shelf Life
24	Poster Presenter 24	Ratna Djamil Faculty of Pharmacy, Universitas Pancasila	Inhibition A-Glucosidase Enzyme The Extract and Nanoparticles of Kembang Bulan Leaf (*Tithonia diversivolia* (Hamsley) A. Gray) Invitro
25	Poster Presenter 25	Novi Yantih Faculty of Pharmacy, Universitas Pancasila	Immunomodulator Activity of *Ziziphus spina*-Christi L. Leaf Extracts Based on Phagocytosis Activity in Rats
26	Poster Presenter 26	Deni Rahmat Faculty of Pharmacy, Universitas Pancasila	Microencapsulation Of Indonesian Polymer Biodiversity In Warthon's Jelly Mesenchymal Stem Cell (Wjmsc)

POTENTIAL INHIBITORY EFFECT OF XANTHINE OXIDASE ENZYME BY COMBINATION OF SALAM FOLIUM (*Syzygium polyanthum* L) AND SISIK NAGA (*Pyyrrosia pilleseloides* L MG PRICE) EXTRACT

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ABSTRACT

Objective: The purpose of this research was to evaluate the inhibition effect of xanthine oxidase by a combination of Salam folium (*Syzygium polyanthum* L) and Sisik Naga (*Pyrrosia piloselloides* (L) M G Price) folium ethanolic extract.

Methods: The study began with the determination of Salam and Sisik Naga folium, materials collection and the production of simplicia until standardized simplicia was obtained. Then, the extract is made and followed by XO inhibition test until the IC_{50} value is obtained. IC_{50} values in combination extract and IC_{50} values in single extract was compared to find out whether there are differences in activity.

Results: IC_{50} value in Salam – Sisik Naga folium combination extract are different than their sole extract but less when compared to Allopurinol.

Conclusion: The effect of XO inhibition by combination is synergic.

Keywords: Salam folium, Sisik naga folium, Ethanolic extract, Xantin Oxidase, Allupurinol

ABSTRACT 02

FORMULATION AND ACTIVITY TEST OF SUNFLOWER SEED OIL LIQUID SOAP AS ANTI-ACNE

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ABSTRACT

Objective: This study aims to obtain a formulation of Sunflower oil seed liquid soap with an active ingredient that is hydrophobic with good stability and also has good antibacterial activity.

Methods: Sunflower seed oil is formulated in liquid facial soap preparations with various concentrations, namely 10% (F1), 15% (F2) and 20% (F3). Evaluation of liquid facial soap preparations includes organoleptic examination, pH, specific gravity, viscosity, foam height and foam stability, freeze and thaw stability, irritation, preferences and antibacterial activity against the bacteria Propionibacterium acnes which causes acne by using the disc diffusion method. Data analysis used Kruskal Wallis statistical test, One Way ANOVA and descriptive.

Results: Based on the results of the evaluation of the preparations, it was found that the organoleptic examination of the F1, F2 and F3 liquid soap preparations had a thick liquid form, milky white to thick, with a distinctive smell of oleum rosae. Liquid facial soap preparations F1, F2 and F3 meet the evaluation requirements of pH, specific gravity, viscosity, foam height, foam stability, freeze and thaw stability, irritation, viscosity and freeze and thaw stability. Based on the results of the One-Way ANOVA statistical test, there was a significant difference ($p < 0.05$) between formulas on the diameter of the bacterial inhibition zone.

Conclusion: It was concluded that the liquid facial soap preparations of sunflower seed oil F1, F2, and F3 were physically stable during storage and based on the antibacterial activity test it was known that F3 had the greatest bacterial inhibition, namely 32.19 ± 0.43 mm in the category of strong inhibition.

Keywords: Formulation, Liquid Soap, Antibacterial, Propionibacterium acne, Sunflower seed

ABSTRACT 03

FORMULATION AND DIFFUSION TEST OF CURCUMIN DENDRIMER USING *POLYAMIDO AMIN* (PAMAM) G4 CONJUGATED *POLYETHYLENE GLYCOL* (PEG) AS A FORM OF DENDRIMER

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ABSTRACT

Objective: Curcumin is a compound derived from the turmeric plant rhizome (*Curcuma longa* L.) which has antioxidant, anti-inflammatory, antimicrobial, and anticancer activity.

Methods: In this study curcumin was encapsulated with Polyethylene Glycol (PEG)-conjugated Polyamidoamine (PAMAM) G4 dendrimer. This research aims to determine the effect of dendrimer concentrations variation on the rate of curcumin diffusion in vitro using Diffusion Cells. Dendrimer was made into 3 formulas with each molar ratio of curcumin to dendrimer is 1:0.2, 1:0.02, and 1:0.002. Each formula was tested for diffusion in vitro and analyzed by two-way ANOVA.

Results: The cumulative amount of curcumin is 516.43 ± 1.96 µg, 406.02 ± 3.26 µg, and 293.50 ± 2.29 µg with the kinetics of diffusion rate following zero-order, first order, and higuchi.

Conclusion: So it can be concluded that the formula with a molar ratio of 1: 0.2 has the highest cumulative amount of curcumin with 516.43 ± 1.96 µg and follows the kinetics of the zero order diffusion rate.

Keywords: Curcumin, dendrimer, PAMAM G4, PEG, diffusion rate.

ABSTRACT 04

PREDICTION OF PHARMACOKINETIC PROPERTIES OF COMPOUNDS IN *Hemigraphis alternata* (BURM.F.) T. ANDER LEAVES USING PKCSM

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ABSTRACT

Objective: Inflammation is a protective reaction of the immune system to defend the body from potentially harmful stimuli, both infectious and non-infectious agents that cause cell damage. It induces the inflammatory cells to be active and trigger inflammatory signaling pathways. The inflammatory process has a role in the healing process and leads the body's homeostasis to normal. Untreated acute inflammation can lead to organ pathology leading to a chronic inflammatory phenotype. Prediction of the affinity of 22 compounds in *Hemigraphis alternata* leaves as anti-inflammatory has been conducted for COX-1, COX-2 and 5-LOX. Prediction of pharmacokinetic properties of the compounds was carried out to obtain inflammatory drug candidates that have high affinity with adequate ADME.

Methods: The application used in this research is pkCSM, a method for predicting and optimizing the pharmacokinetic properties of small molecules that depend on distance-based graph signatures. The pkCSM used 20 predictors which were divided into 4 properties, absorption (7 predictors), distribution (4 predictors), metabolism (7 predictors) and excretion (2 predictors).

Results: **T**here are 5 compounds that have the best pharmacokinetic properties, *8a-Methylhexahydro-1,8(2H,5H)-naphthalenedione, 3,7,11,15-Tetramethyl-2-hexadecen-1-ol, 2-Methylenecholestan-3-ol, 5-Hydroxymethylfurfural* and *2,5-Dimethyl-2,3-dihydro-5H-1,4-dioxepine*.

Conclusion: *3,7,11,15-Tetramethyl-2-hexadecen-1-ol* is a compound that is predicted to have high affinity as an anti-inflammatory and good ADME.

Keywords: Pharmacokinetic, *Hemigraphis alternata*, pkCSM.

ABSTRACT 05

THE ROLE OF PROPOLIS *Tetragonula Sp.* IN OXIDATIVE STRESS AND ITS PROTECTIVE EFFECT AGAINST UV RADIATION ON HUMAN CELLS

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ABSTRACT

Objective: In this report, we present a study of propolis wax from *Tetragonula sp.* bees in protecting cells from UV exposure. The compounds that responsible for this function are identified by literature study and LC-MS. We used HEK 293T and fibroblast cells line.

Methods: HEK 293t and fibroblast cells line were used. Four tests were performed on the cells namely: cell proliferation assay using WST-8; LDH test using WST-8 and free radicals produced on cells test by measuring fluorescence intensity produced by dichlorofluorescein; cell viability through observation using fluorescence microscope on cells stained with Hoechst and PI; and ROS Assay. Prior to UV exposure, propolis wax was added to the cells in different concentration. The authors also analyzed the component in propolis wax using LC-MS.

Results: Based on this assessment, it was found that propolis wax successfully protects the cells against UV-induced free radicals' formation by maintaining the cell proliferation rate, reducing the free radicals produced after UV exposure and decreasing the number of cell death. Nevertheless, we found that a greater concentration of propolis wax tends to be toxic to the cells. While on the LC-MS results obtained about 83 compounds in which 35 of them are flavonoid and polyphenols derived compounds that have antioxidant properties.

Conclusion: Based on these findings, propolis wax produced *Tetragonula sp*. can be used as a potential alternative treatment of anti-oxidative stress and anti-free radicals.

Keywords: Propolis, Oxidative Stress, Anti-Oxidant, Free Radicals

ABSTRACT 06

PRELIMINARY STUDY FOR COVID-19 DRUG DISCOVERY OF 30 PHYTOCHEMICAL COMPOUNDS FROM *Tetragonula Sp.* PROPOLIS as PAK1 INHIBITOR THROUGH MOLECULAR DOCKING

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ABSTRACT

Objective: This study has purpose on evaluation of 30 phytochemical compounds from *Tetragonula sp.* propolis as PAK1 inhibitor using molecular docking.

Methods: Prior to docking, 30 propolis compounds were confirmed first to comply Lipinski rules. The docking simulation between 30 compounds against PAK1 were performed using AutodockVina, while visualization for interaction profile between ligan and receptor were performed using Ligplot+ and PyMol.

Results: Based on the analysis of the docking score, inhibition constants, and interaction profiles; among 30 propolis compounds; glyurallin B, glyasperin A, and broussoflavonol F are that most potential as PAK1 inhibitors. Furthermore, based on literature studies, the compounds in the propolis tend to be synergistic so that they are better used collectively than individually.

Conclusion: These results implicate the potential of *Tetragonula sp.* propolis to be used as therapeutic agents against COVID-19. However, further research is still needed.

Keywords: PAK1, Propolis, *Tetragonula Sp*., COVID

ABSTRACT 07

IDENTIFICATION AND AUTHENTICATION OF HONEY USING CHEMOMETRIC ANALYSIS BASED ON ATR-FTIR AND RAMAN SPECTROSCOPY

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ABSTRACT

Objective: This study aim to develop fast, fitted, and accurate classification method for authenticating honey.

Methods: The authentic honey samples were obtained from local beekeepers and distributors, while the most of adulterated honey samples were made from a mixture of fructose syrup, authentic honey, sodium bicarbonate, and sweet soy sauce, while others were received from local distributors. To authenticate the honey, samples divided into two classes, real honey and adulterated honey. Similarly, to classify the honey, we categorized two classes, *Apis* spp. And stingless bee. ATR-FTIR spectra data were collected using Thermo Scientific's OMNIC FTIR software and processed using Thermo Scientific's TQ Analyst software by dividing the wavelengths into six region between 550-4000 cm-1. And Raman spectra data were collected using HORIBA LabSpec 6 software and processed using CAMO's Unscrambler X10.4 software by dividing the Raman shifts into five region between 200-3350 cm-1.

Results: Our methods effectively authenticate the honey based on ATR-FTIR and Raman spectra. Based on ATR-FTIR spectra data, the best region of honey's authenticity is Region 1,3,4,5,6 (2800-3000 cm-1; 1640-1760 cm-1; 1175-1455 cm-1; 950-1175 cm-1; 750-950 cm-1) and the best region for classification is 750-950 cm-1. Based on Raman spectra data, the best region of honey's authenticity is 970-1150 cm-1 and the best region for classification are 1150-1480 cm-1 and 970-1480 cm-1.

Conclusion: This study successfully demonstrated accurate methods based on ATR-FTIR and Raman spectral data to authenticate and classify the honey.

Keywords: Honey, ATR-FTIR, Raman, discriminant analysis, *Apis* spp., stingless bee.

FORMULATION AND EVALUATION OF TOPICAL NANOEMULSION PREPARATIONS N-HEXAN EXTRACT OF ITCH LEAVES (*Laportea decumana* Roxb L)

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ABSTRACT

Objective: The purpose of this study was to see how far the potential for itchy leaves from Papua, which has the Latin name *Laportea decumana* Roxb L, could be developed into a topical nanoemulsion-based herbal which is known to be empirically efficacious as a pain reliever by the people of Papua and the surrounding eastern region.

Methods: The process of making nanoemulsion preparations was developed using a high-energy method using a High share homogenizer (HSH) ultra turrax with a speed of 20,000 rpm in three stages of time for 15 minutes. The basis for the comparison of nanoemulsions was taken from previous studies that have found nanoemulsion areas on the ternary diagram using the chemix series 7.00 program, namely 5 parts of the oil phase, 45 parts of the surfactant and cosurfactant phases, with 50 parts of water. The ingredients for the nanoemulsion formula used were VCO as the oil phase, tween 80 cosurfactant, and propylene glycol cosurfactant. Two formulations were made with different of 5% and 10% extract of n-hexan *Laportea decumana* Roxb L concentration.

Results: The results obtained are based on nanoemulsion parameters, namely particle size, polydispersity index (PDI), D90, zeta potential, and organoleptic visual dosage forms from pH, viscosity, and cycle tests. obtained for F1 respectively 94.20 ± 2 (nm), 0.4; D90 107 ± 2 (nm), 010.3 mV. Furthermore F2 136.3 ± 2 (nm), 0.3; D90 223 ± 2 (nm), -9.90 mV. The pH of the two formulas had the same values ranging from 6.33 for F1 and 6.23 for F2. The results of the viscosity of the preparation showed a thixotropic pseudoplastic form. Visual observation based on organoleptic analysis of both formulations were stable, light green in color, not pale, did not have a rancid odor, had a characteristic plant odor, and was not sticky..

Conclusion: Based on the research results, the ideal formulation of topical nanoemulsion of itching leaf extract *Laportea decumana* Roxb L to be developed into herbal preparations is F2 which contains 10% extract..

Keywords: nanoemulsion, n-hexane extract *Laportea decumana* Roxb L, particle size, polydiversity index (PDI), zeta potential, D90.

ABSTRACT 09

SUBCHRONIC TOXICITY TEST OF ETHANOL EXTRACT OF (*Ipomoea batatas* (L.) Lam) LEAVES ON KIDNEY FUNCTION OF WHITE MICE (*Mus musculus* L.)

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ABSTRACT

Objective: This study was evaluated toxicity of ethanol extract of *Ipomoea batatas* (L.) Lam. leaves on kidney function by measuring serum creatinine, urine creatinine levels, creatinine clearance and kidney histology of *Mus musculus* L.

Methods:. In this study, the parameters was to measure at 61st days. The method of measurement used is the Jaffe method. Kidney histology preparations were made using the paraffin method. Quantitative parameters compute the amount of glomerular filtration space narrowing and qualitative form of kidney photomicroscopis of histology of white mice.

Results: The results showed that ethanol extract of leaves at a dose of 300 mg/kgBW did not occur a significant difference to the levels of serum and urine creatinine, creatinine clearance of white mice kidneys ($p>0.05$). Whereas at doses of 600mg/kgBW showed a significant difference ($p<0.05$) in some parameters. The results showed that doses of 300 and 600 mg/kgBW showed no macroscopic changes of the kidneys . Microscopic observation of histological kidney showed that there is no significant difference between the doses of 300 and 600 mg/kgBW ($p> 0.05$) against the percentage of renal glomerular damage. At a dose of 900 mg/kgBW there is a significant difference ($p <0.05$) against the percentage of glomerular kidney damage and there were animal deaths in the administration of extract at a dose of 900 mg/kg BW.

Conclusion: *Ipomoea batatas* (L.) Lam leaves are safe to use on dose of 300 mg/kg body weight and can damage kidney at dose 600 and 900 kg/body weight.

Keywords: *Ipomoea batatas* (L.) Lam, kidney toxicity

ABSTRACT 10

FORMULATION AND CHARACTERIZATION OF TRANSDERMAL FILM JACKFRUIT LEAVES (*Artocarpus heterophyllus* LAMK) EXTRACT

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ABSTRACT

Objective: The ethanolic extract of jackfruit leaves is known to have flavonoid secondary metabolites that can act as antibacterial active substances in wound healing. The process of delivering this active substance will be more effective if it is carried out in the form of a dosage form. One such dosage form is transdermal film. The transdermal film preparation itself must have flexible and elastic properties so that it can follow movements in the body that have different contours. So that the dosage formulation needs to add a *plasticizer*. The purpose of this study was to study the effect of differences in the concentration of the *plasticizer* sorbitol and 1:1 glycerol on the characteristics of the transdermal film.

Methods: The concentrations used in the formulations were 60%, 80% and 100%. Evaluation of transdermal film preparations included organoleptic tests, physical stability, folding resistance, uniformity of weight and thickness, water vapor transmission rate, retention capacity, FTIR analysis, and drug release tests. The results of the organoleptic test showed that the film was flexible, greenish yellow in color and had a stable physical stability of the preparation. The increase in the concentration of *plasticizer* also had a significant effect ($p < 0.05$) on the tensile strength test, uniformity of weight and film thickness, water vapor transmission rate and retention capacity.

Results: The FTIR test showed that there was a cross-linking interaction marked by the presence of a new peak at the wave number of 1556.31 cm^{-1}. The best penetration test results are found in formula 2 with % penetration of 31.95% and J of 18.08 g cm^{-2} hours $^{-1}$.

Keyword: Film, Jackfruit leaf extract, Plasticizer, Transdermal, Penetration

ABSTRACT 11

SECOND DEGREE BURN WOUND HEALING ACTIVITY TEST OF ETHANOL EXTRACT MAHOGANY BARK (*Swietenia mahagoni* (L.) Jacq.)

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ABSTRACT

Objective: This research aims to determine the characteristics and effect of ethanol extract of mahogany bark to the rate of healing second degree burns.

Methods: The animal test consisted of 25 male white rats *Sprague Dawley* strain divided into 5 groups. Positive group that is being treated by Lanakeloid-E cream, negative group, and treatment groups with varying dosages (100, 200, and 400 mg/kgBB). The parameters observed included the time formed and the scab's shedding time, and also percentage of wound healing. Burn area data were analyzed using the ANOVA test to see differences the percentage of burns healing between groups.

Results: The results showed ethanol extract of mahogony bark (*Swietenia mahagoni* (L.) Jacq.) at a dose of 400 mg/kgBB was the best dose in accelerating burn healing with %recovery 85,706% during 14 days. Statistical test results on the percentage of burn injury between negative and positive controls and the test groups had significantly different results ($p<0,05$).

Conclusion: The conclusion of this study is that presenting the ethanol extract of mahogany bark (*Swietenia mahagoni* (L.) Jacq) at a dose of 400 mg / kgBB shows the best second degree burns healing.

Keywords: ethanol extract, flavonoid, mahogany bark, second degree burns, *Swietenia mahagoni* (L.) Jacq,

ABSTRACT 12

ANTIDIARRHEAL ACTIVITY OF EXTRACT ETHANOL MELINJO LEAVES (*Gnetum Gnemon* L. (Linn.)) IN WISTAR MALE WHITE RATS INDUCED BY *Escherichia Coli* AND EXTRACT STANDARDIZATION

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ABSTRACT

Objective: Determination of antidiarrheal activity of extract ethanol melinjo leaves (*Gnetum gnemon* L. (Linn.)) in wistar male white rats induced by *escherichia coli* and extract standardization has been performed.

Methods: This research conducted by in vivo method using male white rats of wistar strain induced by *Escherichia coli.* The treatment group was divided into 6 groups: normal, negative control, positive control, and groups with doses 150, 300, and 600 mg/kg BW. Negative control was given Na-CMC and positive control Gentamicin. The initial time diarrhea occurred 24-30 hours after administration of *Escherichia coli* suspension.

Results: The results of the phytochemical screening of the extract ethanol of melinjo contains secondary metabolites of flavonoids, steroids, tannins and saponins. Standardization of the extract ethanol melinjo leaves (*Gnetum gnemon* L.) meet the predetermined standards, while the acid insoluble ash content parameters did not meet the predetermined standards. The parameters feces weight, feces consistency, frequency diarrhea, body weight, number of *Escherichia coli* colonies feces dose 600 mg/kgBW had effect that was almost close to positive control. The results showed that anti-diarrheal effect dose 150 mg/kg BW 35.75%, dose 300 mg/kg BW 43.02%, dose 600 mg/kg BW 50.14%. This shows that ethanol extract melinjo leaves dose 600 mg/kgBW wasn't significantly different from positive control ($p<0,05$). Effective Dose (ED_{50}) Ethanol Extract Melinjo Leave as antidiarrheal was 578,2468 mg/kgBW.f

Conclusion: Extract ethanol melinjo leaves (*Gnetum gnemon* L. (Linn)) dose 600 mg/kg BW has the potential to be used as antidiarrheal and its extract meet the predetermined standards, except the acid insoluble ash content parameters did not meet the predetermined standards

Keywords: Melinjo leaves, etanol extract, antidiarrheal, *Escherichia coli,* $ED_{50.}$

ABSTRACT 13

IN SILICO PREDICTION OF ESSENTSIALS OIL FROM *Cymbopogon nardus* AS IMMUNOMODULATOR IN RHEUMATOID ARTRITIS

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ABSTRACT

Objective: Rheumatoid artritis (RA) is an autoimmune dissease involving the synovial lining of the major joints. Our study involve bioactive compounds of Cymbopogon nardus as possible Rheumatoid arthritis drugs in silico targeted TNF- α, JAK1/2,JAK3,PAD4 and DHFR.

Methods: Using computational docking and receptors from the Protein Data Bank (PDB) files 2AZ5,3EYG,3LXY,1DLS and 1WDA . Molegro Virtual Docker 6.0 was utilized to undertake an in silico anti artritis drugs study. ChemDraw 3D was utilized to minimize the ligand's energy before docking, and the structures Native Ligand were employed as positive control medications. A pharmacokinetic and toxicological study was performed using SwissADME (ADME) and PK-CMS.

Results: Using the Moldock SE mechanism calculates the binding (atom) energies of each protein (Enzyme) and each ligand at the least energetic conformation state. Docking results of ten tested bioactive compound have no displayed the Lowest rerank score scores and best fit within the prominent active site residues.

Conclusion: The Essensials oils from Cymbopogon Nardus have no effectively suppress the Rheumatoid Artritis pathway through inhibition of TNF-α, JAK1/2,JAK3,PAD4 and DHFR which can serve as potential lead compounds for the development of new drugs for the treatment of Rheumatoid Artritis.

Keywords: Rheumatoid artritis, Cymbopogon Nardus, In silico, Molecular Docking, Essensials oils

ABSTRACT 14

EVALUATON OF MICROBIOLOGICAL CONTAMINATION PARAMETERS OF TRADITIONAL MEDICINAL PREPARATIONS CONTAINING RED GINGER

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ABSTRACT

Objective: The purpose of this study was evaluating the presence or absence of pathogenic microbial contamination in traditional medicinal preparations containing red ginger based on specific microbial tests and evaluating the amount of microbial contamination in traditional medicinal preparations containing red ginger based on the ALT and AKK values.

Methods: This research was conducted on instant powdered herbal preparations containing red ginger and internal medicinal liquid containing red ginger. This preparation will be tested for safety and quality requirements including Total Plate Number with Tryptic Soy Agar media, Yeast Mold Number with Sabouroud Dextrose Agar media, Entrobacteriaceae Numbers with Violet Red Bile Glucose media, Escherichia coli with Mac Conkey Agar media, Clostridia with Reinforced media Medium for Clostridia, Salmonella with Rappaport Vasiliadis medium Salmonella Enrichment Broth, and Shigella with Xylose Lysine Deoxycolate Agar.

Results: The results of the study for the ALT and AKK values in red ginger instant powder preparations were <10 CFU/gr, for testing the microbes *Escherichia coli, Salmonella sp., Clostridia, and Shigella sp.* is negative. Then, the results of the research on medicinal liquid in red ginger for ALT and AKK values were <10 CFU/gr, for testing *Escherichia coli, Salmonella sp., Clostridia, and Shigella sp.* is negative/gr.

Conclusion: Based on the results obtained, it is concluded that herbal preparations containing red ginger meet the safety and quality requirements so that they are safe for consumption.

Keywords: Red Ginger, Traditional Medicine, Evaluation of Microbiological Contamination, ALT, AKK, Enterobacteriaceae number, *Escherichia coli*, *Clostridia*, *Salmonella, Shigella*

ABSTRACT 15

MOLECULAR DOCKING OF CYMBOPOGON NARDUS COMPOUNDS AS A PROTEASE INHIBITOR OF SARS-COV-2

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ABSTRACT

Objective: The study aimed to obtain active compounds from *Cymbopogon nardus* as candidates for protease inhibitor of SARS-CoV-2 virus by assessing the ligand-binding affinity in the binding pocket of SARS-CoV-2 main protease protein.

Methods: Molecular docking as a protease inhibitor of SARS-CoV-2 was carried using computational software Molegro Virtual Docker (MVD), computational docking was carried using receptor with Protein Data Bank (PDB) were also used to compare the affinity strength of the test compounds against the protease receptor (code of 5R81). The compounds of Cymbopogon nardus were optimized before docking using ChemDraw and minimized energy using Chem3D. visualization of the docking result by using Discovery Studio and pkCSM was utilized to perform a pharmacokinetic and toxicological analysis (ADMET).

Results: The result showed geranyl acetate, elemol, citronellal, and citronellyl acetate compounds from Cymbopogon nardus has a rerank score more negative than native ligand from 5R81 receptor as a protease inhibitor of SARS-CoV-2.

Conclusion: Cymbopogon nardus can be developed as an antivirus with the mechanism of a protease inhibitor of SARS-CoV-2 candidates after further experimental tests.

Keywords: SARS-CoV-2, Main Protease, Cymbopogon nardus, Molecular docking.

FORMULATION OF CANTIGI LEAVES EXTRACT NANOEMULGEL (*Vaccinium varingiaefolium* Miq.) AS AN ANTIOXIDANT

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ABSTRACT

Objectice: The purpose of this study was to obtain a nanoemulgel preparation of cantigi leaf extract that was safe, physically and chemically stable, and efficacious as an antioxidant.

Methods: Nanoemulsions were prepared by varying the amount of cantigi leaf extract (50 x IC_{50}; 100 x IC_{50}; and 200 x IC_{50}). The nanoemulsion component consisted of extract, isopropyl myristate, cremophor RH-40, 96% ethanol, and distilled water. Stirring speed conditions: 400 rpm at 40 °C. Nanoemulsions were characterized by particle size (PSA), zeta potential (Zeta Sizer), and morphology (TEM). Furthermore, nanoemulgel preparations were made. Nanoemulgel preparations were evaluated for organoleptic, homogeneity, viscosity, spreadability, pH, and antioxidant activity using 2,2′-azino-bis-3-ethylbenzthiazoline-6-sulphonic acid (ABTS) and the irritation test,.

Results: The evaluation results of formula 1, 2, and 3 have an average particle size of 83.40, 93.38, and 171.1 nm with a polydispersity index of 0.217, 0.240, and 0.268. The zeta potential values are: 32,3; 33.8; and 35.9 mV. TEM shows the morphology of the spherical nanoemulsion. The results of the evaluation showed that the nanoemulgel was white, yellowish, thick, had a characteristic odor, and was homogeneous, with a viscosity of (754.97) Ps, plastic thixotropic flow properties, dispersibility (3465.38 ± 1.51) mm^2–(3577.54 ± 1.53) mm^2, pH 5.18. The antioxidant activity of nanoemulgel was 61.05 ppm, and the preparation of nanoemulgel did not cause irritation.

Conclusion: Cantigi leaf extract nanoemulgel **(***Vaccinium varingiaefolium* Miq.**)** has antioxidant activity, meets physical and chemical parameters, and is safe to use.

Keywords: Cantigi, nanoemulsion, nanoemulgel, antioxidant, ABTS.

ABSTRACT 17

FORMULATION GEL *SELF NANOEMULSIFYING DRUG DELIVERY SYSTEM* (SNEDDS) ALPHA-BISABOLOL AS ANTIOXIDANT

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ABSTRACT

Objective: Alpha-bisabolol is a monocyclic sesquiterpene alcohol obtained from the distillation of chamomile flowers (*Matricaria chamomilla*), that has many uses in pharmaceutical industry, one of them is as antioxidant. Alpha-bisabolol formulated into *Self Nanoemulsifying Drug Delivery System* (SNEDDS) to protect it from oxidation reaction in skin metabolism and to help penetrate it to dermis layer where it works. The purpose of this study is to develop the use of alpha-bisabolol as antioxidant which is formulated into SNEDDS gel dosage form. Optimization of SNEDDS was carried out on four formulas with different comparison of surfactant and use percent transmittance as parameter.

Methods: Optimum SNEDDS then tested for characterization including dispersibility test, particle size, polidispersity index (PDI), zeta potential and freeze-thaw cycle. Result for SNEDDS optimization shows that formula 4 produce the highest percent transmittance of 99.44±0.04%.

Results: Optimum formula that was characterized resulting clear nanoemulsion with emulsification time 29.64±0,09 second, with particle size of 16.74 nm, PDI of 0.121 and zeta potential of -18.7 mV also shows good stability after freeze-thaw cycle test for three cycles. Optimum SNEDDS then formulate to gel form. Based on the result of physical and chemical quality evaluation test for alpha-bisabolol SNEDDS gel, it was found that SNEDDS gel was homogeneous with clear yellowish appearance, odorless with semi solid form, had viscocity 180±2 Ps with plastic thixotropy flow properties, dispersibility 2937.7691 ± 2.40 mm^2 and pH 5.55 ± 0.015.

Conclusion: It can be concluded that alpha-bisabolol and SNEDDS alpha-bisabolol gel have antioxidant activity with IC50 of 123.78 g/mL and 371.44 g/mL, respectively.

Keywords: Alpha-bisabolol, *Self Nanoemulsifying Drug Delivery System* (SNEDDS), gel, antioxidant.

ABSTRACT 18

ANTIOXIDANT ACTIVITY OF BROWN SEAWEED (*Sargassum polycystum*) NANOPARTICLES EXTRACT IN RATS FED HIGH FAT DIET

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ABSTRACT

Objective: The aims of this research to determine the antioxidant activity of brown seaweed in the form of nanoparticles on the parameters of MDA, SOD and Catalase.

Methods: This study used 24 male rats strain Wistar. Rats were divided into six groups consisting of normal control groups (gave a standard diet as a baseline), positive controls (vitamin E), negative controls (induced high-fat food) , and test groups were induced high-fat feed and is given brown seaweed nanoparticles extract with a dose I (50 mg / Kg BW), dose II (100 mg / Kg BW), dose III (200 mg / Kg BW). Rats were induced with high-fat food for 35 days, then brown seaweed nanoparticles were given as antioxidants for 14 days.

Results: The results of antioxidant activity of brown seaweed nanoparticles extract on the inhibition percentage in the dosage group on the MDA parameters are 42,28%, 43,64%, 57,90% ; and enhancement percentage SOD parameters were 75,03%, 144,28%, 196,71% and catalase parameters were 52,85%, 88,77% 218,73%.

Conclusion: The conclusion of this research showed brown seaweed extract nanoparticles have antioxidant activity as seen from the MDA, SOD and catalase parameters.

Keywords: Brown Seaweed *(S.polycystum*), Antioxidants activity, Nanoparticles.

ABSTRACT 19

THE IMPACT OF PRODUCT QUALITY AND SERVICE TREATMENT QUALITY TO SATIFICATION AND LOYALITY OF PATIENT IN BEAUTY CLINIC BEKASI CITY

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ABSTRACT

Objective : This study aims to determine the effect of product quality and beauty care on satisfaction and impact on patient loyalty in three beauty clinics in Bekasi

Methods : This research used causal descriptive methods. We share of 225 questionarre divided proportionally in three clinics, then analyzed SEM using Lisrell 8.0.

Results: The results of our data show that Product Quality has a significant effect on Patient Satisfaction (t observation 4.357> H01 1.96) but does not significantly influence Loyalty (t observation 0.684 <H03 1.96). Quality of Care Services significantly influence Patient Satisfaction (t observation 2,071> H02 1.96) but no significant effect on Patient Loyalty (t observation-0.439 <H04 1.96). Patient satisfaction has a significant direct effect on patient loyalty (t observation 4.095> H05 1.96).

Conclusion : From this data it was concluded that to gain patient loyalty, these three beauty clinics must provide patient satisfaction by improving product quality and the quality of treatment.

Keywords : Quality beauty products, Quality of beauty care, Patient satisfaction, Patient loyalty, Beauty Clinic.

ABSTRACT 20

FORMULATION AND EVALUATION OF *RED GINGER OIL* (*Zingiber officinale Roscoe*) BALM AS AN ANALGESIC

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ABSTRACT

Objective : The purpose of this study to obtain the best formulation of red ginger oil balm that can be used for aromatherapy as analgesic.

Method : The red ginger plant in Steam-water distillation to produces red ginger oil. Red ginger oil is tested for quality and formulated. The best formulation result are then tested for product quality.

Result : The result of red ginger oil quality parameters is obtained accordance with literature. The result of hedonic test, formula 4 was chosen to be the best formula. The result of total plate number is <`10 CFU/mL. The result of identification of *Staphylococcus auresus* and *Pseudomonas aeruginosa* is negative. The result of stability test, irritation tests, and pH test is stable during storage.

Conclusion : The results showed that formula 4 is the best formula and has the potential to circulated in large quantities

Keyword : *Red ginger oil,* balm, aromatherapy, *Zingiber officinale* Roscoe, analgesic.

ABSTRACT 21

FORMULATION IN TABLET FORM OF NANOPARTICLES FUCOIDAN CRUDE FROM EXTRACT BROWN SEAWEED (*Sargassum polycystum*) AS ANTIOXIDANT

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ABSTRACT

Objective: Fucoidan is L-Fucose sulfated polysaccharides found in brown seaweed and has antioxidant activity. Crude fucoidan has low water solubility, so it is made into nanoparticles. The purpose of this study is to determine the effect of making nanoparticles on the dissolution profile of crude fucoidan tablets and crude fucoidan nanoparticles tablets, to produce tablets that meet the physical qualification requirements, and to determine the fucoidan's antioxidant effect.

Methods: Crude fucoidan nanoparticles are made by the ionic gelation method using chitosan. Crude fucoidan and crude fucoidan nanoparticles were made into tablet form using the direct compression method and made using F-MELT Type C as filler-binder and Sodium starch glycolate and croscarmellose sodium as disintegrant.

Results: The particle size of nanoparticles is 664.2 nm, the polydispersity index is 0.433, the potential zeta is +47.6, and it has a spheric shape. IC_{50} of crude fucoidan and crude fucoidan nanoparticles were 93.3152 ppm and 104.1607 ppm. Meanwhile, IC_{50} of tablets formula V and formula VI were 72.7722 ppm and 82.1310 ppm. The dissolution percentage of Formula II, III, V, VI at 120 minutes are 47.68%, 86.35%, 35.01% and 66.38%.

Keyword: Brown Seaweed, fucoidan, nanoparticles, tablet, antioxidant

ABSTRACT 22

FORMULATION AND EVALUATION OF CITRONELLA OIL IN ROLL ON APPLICATION SYSTEM

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ABSTRACT

Objective : The purpose of this study to obtain the best formulation of roll on *Citronella oil* that can be used for aromatherapy.

Method : The citronella plant in Steam-water distillation to produces citronella oil. Citronella oil was tested for quality and formulated. The best formulation result was then tested for product quality.

Result : The result of rendemen citronella oil was 0,6%. The result of citronella oil quality parameters was obtained accordance with literature. The result of hedonic test, formula 2 was chosen to be the best formula. The result of average of transferred volume is 10,0 mL. The result of total plate number was <`10 CFU/mL. The result of identification of *Staphylococcus auresus* and *Pseudomonas aeruginosa* was negative. The result of stability test was stable during storage.

Conclusion : The results showed that formula 2 was the best formula and has the potential to produced in large quantities

Keyword : *Citronella oil,* roll on, aromatherapy, *Cymbopogon winterianus* Jowitt

ABSTRACT 23

TOPICAL EFFECT OF *TETRAGONULA SAPIENS* HONEY ON THE HEALING PROCESS OF POST-CAESAREAN SECTION WOUNDS

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ABSTRACT

Objective: The purpose of this study was to determine the effect of honey on the duration of abdominal wound healing among postpartum mothers that underwent cesarean.

Methods: A quasi-experimental design with a post-test-only control group design was used. The participants were a total of 28 postpartum mothers with a history of cesarean section on the 3rd day and were selected by using accidental sampling. 14 women were given the intervention by compressing the wound with 5 ml of honey on a sterile gauze. Meanwhile, for the control group, NaCl 0.9% solution (250 ml) was applied. The intervention was done two times a day within the distance of 12 hours for seven days in a row. The observation was done based on REEDA scale.

Results: The results showed that the wounds in women who got the honey intervention healed faster compared to the control group. Based on the statistical test results from the Pearson Chi-Square test, a value of 0.002 was obtained.

Conclusion: *Tetragonula sapiens* honey accelerated the healing time of post-caesarean section wounds.

Keywords: honey, post-caesarean section, *Tetragonula sapiens,* wound healing

ABSTRACT 24

THE ROLE OF RED GINGER AND WARM WATER IN RELIEVING LABOUR PAIN

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ABSTRACT

Objective: The purpose of this study was to compare the efficacy of red ginger and warm water in relieving labour pain at the first stage of active phase by applying two methods of administration, which were drinking and compress.

Methods: Two-group pre-test—post-test design was conducted, and 60 respondents were chosen by using purposive sampling. The respondents were divided into four groups consisting of 15 respondents each. Each group was given different intervention. The interventions were of red ginger tea consumption (group A), warm water consumption (group B), red ginger compress (group C), or warm water compress (group D). The data analysis was done by univariate and bivariate analysis through Wilcoxon and Mann Whitney tests.

Results: Based on statistical analysis, the Mann Whitney (Z) value was -4.261 and -3.240 with p- value equal to 0.000 and 0.001 for drinking and compress method respectively. This indicated that there was a significant different effect of red ginger and warm water on the labour pain reduction at the first stage of active phase. Furthermore, comparing the two methods, the greater Z value of red ginger tea consumption was found in comparison to the Z value of red ginger compress.

Conclusion: Red ginger tea consumption was more effective compared to red ginger compress in reducing the labour pain at the first stage of active phase.

Keywords: labour pain, midwifery, red ginger, stress reduction, warm water

ABSTRACT 25

PROPOLIS AS AN ALTERNATIVE TO INCREASE HEMOGLOBIN LEVELS IN ANEMIC ADOLESCENT GIRLS

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ABSTRACT

Objective: The purpose of this study was to analyze the effectiveness of *Tetragonula sapiens* propolis collected from North Luwu, Sulawesi, Indonesia to treat anemia in adolescent girls.

Methods: A quasi-experimental design with two-group pre-test—post-test design was applied, and 44 respondents were chosen by using purposive sampling. The respondents were divided into two groups. Each group was given iron supplement every day. For the intervention group, the respondents were also given 5 drops of propolis for three times a day. Meanwhile, for the control group, IPI vitamin C were given instead of propolis. The intervention was given for 30 days in a row. The Hb level measurement was conducted after 30 days.

Results: The results showed that the Hb levels of the intervention group were higher compared to the control group after given the propolis for 30 days. The result of the analysis showed a significant value of (2-tailed) 0.000 < 0.05.

Conclusion: *Tetragonula sapiens* propolis could be used to increase the Hb levels in anemic adolescent girl.

Keywords: adolescent girls, anemia, hemoglobin, propolis, stingless bee

ABSTRACT 26

THE USE OF INTERNET-BASED INFORMATION MEDIA BY PHARMACIST IN SOUTH JAKARTA IN PROVISION OF PHARMACEUTICAL SERVICES DURING COVID-19 PANDEMIC

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ABSTRACT

Objective: This study aimed to evaluate the pattern of internet-based information media used by community pharmacist to provide pharmaceutical services during COVID-19 pandemic.

Methods: An observational study with cross sectional design was undertaken by disseminating online questionnaire to community pharmacists who met the inclusion criteria in South Jakarta. Data collection were conducted through Indonesian Pharmacist Association social media within the period of April-May 2021. Chi-square test was used to compare the proportion of pharmacists using online media use before and during the pandemic.

Results: Forty respondents participating in this study where minority (5.0%) were the proprietors of the pharmacies. On average, the respondents aged 31.45 years old and more than 80% were females. Majority (84.2%) of the respondents used the internet service provided by their office and one-third used their own smartphones to access the online media. Compared to pre-pandemic period, there were significantly more pharmacists ($P<0.05$) searching internet-based information media during COVID-19 pandemic to provide pharmaceutical services predominantly drug information services. WhatsApp is the most popular application for sharing information whilst Zoom is the most common video conference media for counseling. Some information-sharing applications rarely used pre-pandemic (e.g., Twitter) were used more intensively during the outbreak. The study also found that there was no difference in types of information searched before and during the pandemic as instruction of appropriate medicine use cited as the most frequent information.

Conclusion: Pharmacists expand the use of online information media to support their role in providing pharmaceutical services during COVID-19 pandemic.

Keywords: information media, internet, pharmacists, pharmaceutical services, COVID-19.

ABSTRACT 27

THE ANTIOXIDANT-ANTICANCER IN SILICO OF PHENOLICS AND FLAVONOIDS FROM MANGIFERA SPECIES USING MOLECULAR DOCKING PLANTS

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ABSTRACT

Objective: The purpose of this research is to study the potential antioxidant-anticancer and phenolic and flavonoid activities contained in the Mangifera species using in silico molecular docking method.

Methods: The in silico method uses PLANTS, YASARA, MarvinSketch, and Discovery Studio 2020 software. The test compounds included mangiferin, homomangiferin, isomangiferin, quercitrin, kaempferol 3-O-glucoside, catechin, epicatechin, daidzein, genistein, tocopherol, gallic acid, 3-methyl gallate, gallic acid methyl ester, gallic acid ethyl ester, gallic acid propyl ester, m-digallic acid, ethyl digallate, ellagic acid, and protocatechuic acid. Vitamin C, doxorubicin, and hydroxyurea a comparison compounds. The antioxidant protein targets used are 1QQW, 1V4S, 1XAN, 2BEL, 2C9V, 4K7O, 5M2F, 6COX, and the anticancer target protein is 2W3L.

Results: The results showed that gallic acid had better antioxidant potential than the original ligand, but also vitamin C was better than the comparison of the original ligand test against the 1V4S receptor. Vitamin E has better antioxidant potential compared to the comparative compounds on 1XAN, 2BEL, 4K7O, 5M2F, and 6COX receptors. The results of anticancer activity testing of 2W3L receptors related to vitamin E have better activity compared to other test compounds and the comparative compounds and original ligands.

Conclusion: Based on research conducted, vitamin E has the best antioxidant and anticancer activity compared to other tested compounds.

Keywords: Molecular docking, Mangifera species, antioxidants, anticancer, phenolics-flavonoids.

ABSTRACT 28

DEVELOPMENT OF LIQUID CRYSTAL NANOPARTICLE GEL-LOADED BINJAI LEAF (*Mangifera caesia* J.) OF METHANOL EXTRACT

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ABSTRACT

Objective : Binjai leaf (*Mangifera caesia* J.) of methanol extract has antioxidant activity, with IC50 6.48 g/mL. Due to its high potential can be developed as gel formulas. The technology of lipid bases such as liquid crystal nanoparticles is widely used to increase penetration. So the aims of this study are to develop and determine the optimum formula of gel and liquid crystal nanoparticles incorporated into a gel with variations and concentrations of gelling agents.

Methods: Binjai leaf was extracted with the soxhletation method. Furthermore, liquid crystal nanoparticles were prepared by hot homogenization and sonication method formulated in a gel formula with variation concentration of gelling agent Na-CMC, Tragacanth, and Viscolam. The liquid crystal nanoparticles were tested its physical stability and in vitro penetration test against gel formula of Binjai leaf of methanol extract.

Results : The results showed concentration and type of gelling agent affect the value of spreadability, viscosity, and adhesive test. liquid crystal nanoparticles gel formulas show high value rather than gel because of adding surfactant dan lipid on formula. There were no significant changes in organoleptic, pH test, homogeneity test, spreadability test, adhesive test, viscosity test, of gel, and the liquid crystal nanoparticles gel freeze-thaw test. The hedonic test showed mostly like on F9. In vitro penetration test showed that liquid crystal nanoparticles gel have the best penetration against its gel.

Conclusion: Therefore, liquid crystal nanoparticles gel a suitable formulation for physical stability dan enhanced penetration of Binjai leaf (*Mangifera caesia* J.) of methanol extract.

Keywords: Binjai Leaf (Mangifera caesia J.), Liquid Crystal Nanoparticle Gel physical stability,in vitro penetration

ABSTRACT 29

FORMULATION AND TEST ANTIBACTERIAL ACTIVITY OF NANOPARTICLES ETHANOL EXTRACT OF TIN LEAVES (*Ficus carica* Linn.) ON *Staphylococcus aureus*, *Bacillus subtilis, Pseudomonas auroginosa, Eschercia coli* AND *Candida albicans*

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ABSTRACT

Objective: The purpose of this study was to preparation nanoparticles of fig leaf (*Ficus carica Linn.*) ethanol extract by ionic gelation method and test antibacterial activity.

Methods: Preparation of Ficus carica leaves extract using maseration method and the quantification of chemical compound was determined its total phenol and flavonoid levels. The nanoparticles were prepared by ionic gelation reaction by 1% sodium tripolyphosphate solution dropped into 0,5% chitosan solution and ethanol extract of Ficus carica leaves. The nanoparticles was characterized using Particle Size Analyzer and antibacterial activity tested using *Kirby-Bauer* disc diffusion method.

Results: The results of phytochemical screening for simplicia powder and 96% ethanol extract of Ficus carica leaves contain secondary metabolites of alkaloids, flavonoids, saponins, tannins, glycoside, and triterpenoid steroids. The results of the determination of the quality parameters meet the requirements of quality and safety standard of medicinal herb. The result of the particle size of nanoparticle of Ficus carica extract was 418 ± 2.8, 460 ± 5.8, and 538 ± 2.4 nm, 587 ± 2.4 nm for formula F1, F2, F3 and F4, respectively. All formulations met the size requirements of nanoparticles in range of 10-1000 nm. Ficus carica leaves extract nanoparticles can inhibit the growth of *Staphylococcus aureus, Bacillus subtilis, Pseudomonas auroginosa, Eschercia coli* and *Candida albicans* with inhibition zones 17.00 mm, 15.13 mm, 14.43 mm, 13.30 mm and 11.70 mm, respectively.

Conclusion: Ficus carica leaves has the potential to be used as antibacterial medicinal herb and its extract meet the standard of quality control and safety.

Keywords: Fig leaf (*Ficus carica. Linn*), antibacterial, nanoparticles, ionic gelation, *Kirby-Bauer.*

ABSTRACT 30

REVIEW ARTICLE "THE POTENTIAL OF NATURAL PRODUCTS IN INHIBITING PREMATURE SKIN AGING"

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ABSTRACT

Objective: The skin is the outermost organ of the body so that the aging process that occurs in the skin is the most visible indicator of aging. One effort to prevent premature aging of the skin is to use cosmetics from synthetic or natural products.

Methods: The methods that were used are literature studies from national and international journals, including the original article, research article, etc. with the total of 40 journals.

Results: Secondary metabolite compounds from natural ingredients such as flavonoids, polyphenols, alkaloids, and terpenes have antioxidant activity and have the potential to be anti-aging substances for the skin. The initial stage of searching for natural ingredients that have anti-aging activity can be done by developing in vitro activity screening test methods, such as inhibition of collagenase, elastase, hyaluronidase, and tyrosinase enzymes. This enzyme plays an important role as one of the causes of premature aging of the skin. From the literature search, it was found that many plant extracts to active compounds and cosmetic preparations from the extracts can inhibit these enzymes.

Conclusion: The group of compounds that are known to have activity as enzyme inhibitors is polyphenolic compounds, especially those with multimer properties, flavonoids, especially those with ortho-OH groups, triterpenes (especially pentacyclic), essential oils, and others, one source of potential compounds as raw materials in the formulation of anti-aging cosmetic preparations.

Keywords: premature skin aging, in vitro test, plant extract, elastase enzyme, collagenase enzyme.

ABSTRACT 31

PHYSICAL EVALUATION OF NANOEMULGEL AND EMULGEL DOSAGE FORM CONTAINING ETHANOLIC EXTRACT OF KERSEN (*Muntingia calabura* L) LEAVES: A COMPARATIVE STUDY

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ABSTRACT

Objective: The aim of this study was to compare nanoemulgel with emulgel dosage form containing ethanolic extract of kersen leaves using various of surfactant (Tween 80) and cosurfactants (PEG 400) concentrations and evaluating the physical quality of the dosage form.

Methods: Nanoemugel of ethanolic extract of kersen leaves was prepared by the spontaneous emulsification method. Preparation of each nanoemulgel was made in three various ratio of Tween 80 and PEG 400 as follows F1 (34:26), F2 (36:24) and F3 (38:22) and 6% ethanolic extract of kersen leaves. The formula were evaluated included pH, viscosity, homogeneity, emulsion type, particle size, transmittance test, centrifugation test, specific gravity, interfacial tension, spreadability test, and stability test in various temperature. All the data obtained were statistically analyzed.

Results: All nanoemulgel dosage form remained stable in storage for 12 weeks at room temperature (28±2°C), low temperature (4±2°C), and high temperature (40±2°C), had particle sizes in the range 196.12 nm to 200.84 nm which the optimal surfactant-cosurfactant point was Tween 80 : PEG 400 (38:22), spreadability were 4.4 – 6.9 cm, specific gravity were 1,059 – 1,091 g/mL. interfacial tension were 35,1 – 36,9 dynes/cm, and no separation in the centrifugation test. However, emulgel dosage form had a particle size of 1577,34 nm, unstable after 6 weeks during storage at room temperature, was phase separated in the centrifugation test and had surface tension 57,41 ± 0,31 dyne/cm.

Conclusion: Ethanolic extract of kersen leaves can be formulated as a nanoemulgel dosage form which more stable compare to emulgel dosage form.

Keywords: *Muntingia calabura*, L., kersen leaves, extract, nanoemulgel, surfactant

ABSTRACT 32

THE PHYSICAL CHARACTERIZATION COMPARISON BETWEEN CLOVE OIL NANOEMULSION WITH AND WITHOUT *Catharanthus roseus* (L) G. Don EXTRACT AND THEIR ANTIOXIDANT ACTIVITIES

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ABSTRACT

Objective: The purpose of this study was to compare the physical characterization, stability and antioxidant activity of both clove oil nanoemulsions, with and without *Catharantus roseus* (L) G. Don extract.

Methods: The preparation of nanoemulsion was conducted by using Tween 80 and Span 80 as main surfactant, clove oil as oil phase with (F1) and without (F0) addition of *Catharanthus roseus* (L) G. Don. The physical characterization of nanoemulsion such as organoleptic test, homogeneity test, the type of emulsion, pH determination and particle size analysis were evaluated. The stability of nanoemulsion was conducted by storing the nanoemulsion in 25 ^{0}C and 40 ^{0}C for 3 months and with accelerated test such as centrifugation test and freeze thaw test. The antioxidant activity was determined by using 1, 1-diphenyl-2-picrylhydrazyl (DPPH) method.

Results: The result showed that both formula were transparent, homogeny, had oil in water type of emulsion, pH in the range of 5.66 – 6.96 and with particle size below than 250 nm. All formula showed a good stability after storage in extreme temperature for 3 months and after accelerated test. The IC_{50} value as antioxidant activity of F0 and F1 were 124.31 ± 4.32 and 96.29 ± 3.64 ppm, respectively.

Conclusion: Generally, the clove oil nanoemulsion loaded with *Catharanthus roseus* (L) G. Don is successfully produced with a very good characterization and stable in extreme storage and having strong antioxidant activity.

Keywords: Clove oil, *Catharanthus roseus* (L) G. Don, nanoemulsion, stability,

ABSTRACT 33

SCREENING ANTI-BACTERIAL ACTIVITY AND MOLECULAR IDENTIFICATION OF LACTIC ACID BACTERIA (LAB) FROM FERMENTED CABBAGE (*brassica oleracea L.*) AGAINST *Shigella dysenteriae* PATHOGEN BACTERIA

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ABSTRACT

Objective: Lactic Acid Bacteria (LAB) are often found naturally in foodstuffs such as vegetables and fruits. Cabbage fermentation is one of the best sources for producing Lactic Acid Bacteria which contains antibacterial compounds such as bacteriocin, hydrogen peroxide, and organic acids. The aims of this study were to isolate LAB, to screen for antibacterial activity, and to identify the selected isolates.

Methods. This study began with the isolation of Lactic Acid Bacteria from fermented cabbage, continued with screening for antibacterial activity using the disc diffusion method and molecular identification of isolates with the highest antibacterial activity using the PCR method.

Results. After isolation, 6 isolates were obtained, namely K31, K32, K33, K34, K35, K36. The results of the antibacterial activity test showed that K32 isolate had the highest activity against the test bacteria *Shigella dysenteriae*. Molecular identification by PCR method and sequencing of amplification results showed that isolate K32 had 99% similarity to Lactobacillus buchneri strain JCM 115.

Conclusion. From the results of the study, it can be concluded that fermented cabbage contains Lactic Acid Bacteria which has antibacterial activity against *Shigella dysenteriae*.

Keywords : Fermented Cabbage, Lactic Acid Bacteria, Antibacterial, *Shigella dysenteriae*, PCR

ABSTRACT 34

THE FORMULATION OF NANOEMULSION SERUM CONTAINING PEGAGAN EXTRACT (*Centella asiatica* L. Urban) AND CHIA SEED OIL (*Salvia hispanica*) FOR SKIN HYDRATION EFFECT

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ABSTRACT

Objective: Study about extracting *Centella asiatica* L. Urban herb to produce high concentration of asiaticoside, and formulation of nanoemulsion serum combination from *Centella asiatica* extract and chia seed oil for skin hydration effect.

Methods: *Centella asiatica* extraction was performed by maceration using 70% ethanol. Production process of nanoemulsion is started with quality test of *Centella asiatica* herb according to reference value, followed with optimation of extraction method of *Centella asiatica* herb and production of high viscocity of extract yields and asiaticoside content of the extract. Four different formulas were obtained from nanoemulsion serum production with different concentration of chia seed oil (1%, 2%, 3%, 4%). Further process is looking for the best and most effective cosmetic product for skin. Two formulas F1 (1% chia seed oil) and F4 (4% chia seed oil) were selected for further clinical testing which were applied at face skin for 7 days, then was measured using skin analyzer.

Results: Optimation result of extraction method of *Centella asiatica* herb as high as 28.74% extract yields and 3.12% asiaticoside content. The result value of formulation based on effect of moisturizing/hydration then can be analyzed with minitab program using one way anova method. The result indicated that the product can increase face skin moistness at 20 respondents, where 13.36% increase from F1 formula and 13.88% increase from F4 formula.

Conclusion: The nanoemulsion serum containing combination of *Centella asiatica* extract and chia seed oil is enable to increase moisturizing effect on dry skin or normal tend to dry skin.

Keywords : Nanoemulsion, Centella, *Centella asiatica*, asiaticoside, chia seed, hydration, serum, cosmetic

ABSTRACT 35

ORGANIC LIP CREAM FORMULATION WITH NATURAL COLOR FROM BEET ROOT (*Beta vulgaris* L) AND CHIA SEED OIL MOISTURIZER (*Salvia hispanica*)

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ABSTRACT

Objective: The purpose of this study was evaluated the quality parameters and analyzed moisturize effectiveness activity of Organic Lip Cream with natural color from beet root (*Beta vulgaris L*) and Chia Seed Oil moisturizer (*Salvia hispanica*).

Methods: The Beet root extraction was optimized using 3 solvents and 2 type cultivation (Conventional and Organic) and was determined its total Betalain level (Betanine and Vulgaxantin). The quality parameter of Lip Cream was evaluated as physical appearance, texture, viscosity, adhesion test, pH, homogeneity, Hedonic test, acute dermal irritation test and stability. Testing the effectiveness of moisturizers by measuring lip moisture content.

Results: Organic beets contain betalain pigment total concentration significantly higher than beets from conventional cultivation. 96% ethanol solvent with the addition of 1-2 % citric acid (pH 5) extracting betalain pigment from organic beets was significantly greater than 70% ethanol solvent and water solvent. Organic lip cream is sufficient to increase lip moisture or water content significantly immediately after use (Formula 1% Chia was 16.935% and Formula 4% Chia was 18.321%), 4 hours after use and routine use (Formula 1% Chia was 7,901% and Formula 4% Chia was 8.605%) for 3 days compared to before use (Formula 1% Chia of 4.881% and Formula 4% Chia of 4.836%). Based on statistical result of Hedonic test, the comparison on the appearance of the preparation, sensation on the lips, adhesion and smearing power shows no significant difference between Formula 1% Chia and Formula 4% Chia. Organic chia seed oil and organic beetroot extract formulated in organic lip cream meet specifications of good lip cream, not irritative, can effectively moisturize lips and stable for 4 weeks at 40 ° C.

Conclusion: Organic chia seed oil and organic beetroot extract formulated in organic lip cream meet specifications of quality control, safety and efficacy.

Keywords: Chia Seed Oil, Beets, Betalain, Organic, Moisturizer

ABSTRACT 36

CHARACTERIZATION, FTIR SPECTRA PROFILE AND PLATELET ANTI-AGGREGATION ACTIVITY OF crude fucoidan FROM *Sargassum crassifolium*

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ABSTRACT

Objective: This research was aimed to investigate the characterization and FTIR spectra profile in correlation with platelet anti-aggregation activity of crude fucoidan from *Sargassum crassifolium*.

Methods: Brown seaweed powder was macerated with 85% ethanol then the residu was extracted using 0.1 M of HCl solution. The filtrate was added with 1% of CaCl2 and store overnight, precipitated with ethanol, and lyophilized as crude fucoidan. It was analyzed for fucose, sulfate, carbohydrate content, FTIR spectra and evaluated the in vitro platelet anti-aggregation activity. Partial least square (PLS) analysis was conducted to identify the functional group that contribute the platelet anti-aggregation activity.

Results: The fucose, sulfate, and carbohydrate content were 3.64-9.44%, 12.05-18.01%, and 11.45 – 21.41%, respectively. The results of the statistical analysis showed significant differences in fucose, sulfate, carbohydrate content, and platelet anti-aggregation activity of crude fucoidan extracted at different harvest time. According to the result of partial least square (PLS) analysis using FTIR spectra data and the value of IC50, the functional group that contribute the platelet anti-aggregation activity were OH, C=O, and S=O.

Cnclusion: Platelet anti-aggregation activity of crude fucoidan was proportional to the level of sulfate not to fucose and carbohydrates levels. The functional group of crude fucoidan which were correlated with this activity could be identified.

Keywords: Carbohydrate, fucoidan, fucose, FTIR, PLS analysis, platelet anti-aggregation, Sargassum sp, sulfate.

ABSTRACT 37

ANTIHYPERTENSIVE AND ANTIOXIDANT ACTIVITIES OF *Cnidoscolus aconitifolius* (Mill.) I. M. Johnst. LEAVES

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ABSTRACT

Objective: This study aims to determine the antihypertensive and antioxidant activity of Japanese papaya leaves extract (Cae). The parameter for antihypertensive was the blood pressure. The parameters of antioxidant activity were malondialdehyde (MDA) and catalase. The rats induced by cyclosporine

Methods: This study divided into seven groups of rats (n = 4), the normal group, the negative control group/hypertension group, and the hypertension group with therapy of captopril, vitamin C, CAe (250; 500; 1000 mg/Kg). Each group given orally induced cyclosporine 15 mg/kg for seven days to increase blood pressure, except the normal group. Systolic and diastolic blood pressure measured by the tail-cuff method. After administration of therapy, at the end of treatment, MDA and Catalase levels of mice were measured in each group.

Results: Captopril and CAe could significantly decrease systolic and diastolic blood pressure ($p<0.05$) compared to the negative cyclosporine-induced group. CAe (500 and 1000 mg/kg) can decrease of systole and diastole blood pressure not significantly different ($p> 0.05$) with the captopril group. CAe (1000mg / KgBB) can reduce MDA in proportion to the vitamin C. The antioxidant content of CAe can increase catalase activity in cyclosporine-induced white rats.

Conclusion: *Cnidoscolus aconitifolius* ethanol leafs extract can decrease systolic and diastolic blood pressure and can reduce MDA levels and increase catalase activity in cyclosporine-induced mice.

Keywords: Antihypertension, *Cnidoscolus aconitifolius*, catalase, MDA, antioxidant

ABSTRACT 38

Moringa oleifera EXTRACT- LOADED NANOSTRUCTURED LIPID CARRIER GEL: FORMULATION, CHARACTERIZATION AND ANTICOLLAGENASE ACTIVITY EVALUATION

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ABSTRACT

Objective: To develop nanostructured lipid carrier (NLC) gel loaded with Moringa oleifera extract and to evaluate its anticollagenase activity.

Methods: The extract Moringa oleifera leaf was prepared by maseration kinetic method using ethanol 96% solvent. The extract loaded NLC was prepared through solvent evaporation method using solid lipid, liquid lipid and surfactant. Cetyl alcohol, oleic acid, and Tween-80 were used as solid lipid, liquid lipid, and surfactant, respectively. The characterization, transmission electron macroscopy and anticollagenase activity test of NLC-loaded Moringa oleifera extract were given for the extract loaded NLC produced. The NLC then characterized and formulated into a gel form and evaluated by organoleptic test, homogeneity, pH, spreadability test, viscosity, flow properties and anticollagenase activity evaluation.

Results: The result of characterization of 96% extract loaded NLC showed the sperical-shape particle size 184.1 nm; polydispersity index 0.432; dan zeta potential -25.4 mV. Result of gel color was white to yellow that homogeneous, plastic thixotropic flow properties, pH 6.21 and spreadibility 9004.27 mm^2. Anticollagenase activity evaluation of the Moringa oleifera extract, NLC-loaded extract and NLC-loaded extract gel were found 113.18; 129.78; 207.43 µg/ml, respectively.

Conclusion: *Moringa oleifera* extract-loaded NLC fullfilling the quality evaluation and potential to inhibit collagenase activity to minimize skin wrinkles.

Keywords: *Moringa oleifera*, Nanostructured Lipid Carrier, Anticollagenase

ABSTRACT 39

ANTI-INFLAMMATORY AND ANALGESIC ACTIVITY OF *Musa acuminata x Musa balbisiana* PEEL *IN VIVO*

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ABSTRACT

Objective:The ripe kepok banana peel (*Musa acuminate x Musa balbisiana*) contains high evels of flavonoids, alkaloids, tannins, saponins and triterpenoids. Flavonoids function to slow down the inflammatory process through inhibition of the arachidonic acid metabolic pathway, the formation of prostaglandins, and the release of histamine. This study aimed to examine the anti-inflammatory and analgesic effects of kepok banana peels decoction.

Methods: This study used the Winter method for anti-inflammatory assay by induction of carrageenan on the soles of rat's feet and Sigmund's method for analgesic assay with intraperitoneal induction of acetic acid in mice. Group I as a negative control, group II as a positive control with sodium diclofenac as a comparison control, group III as a low dose (200 mg/kg BW) of kapok banana peel decoction, group IV as a medium dose (400 mg/kg BW) of kapok banana peel decoction, and group V as a high dose (800 mg/kg BW) of of kapok banana peel decoction.

Results: The percentage of inhibition in the anti-inflammatory test in rats for groups II, III, IV and V was 34.43%, 17.68%, 25.53% and 25.4%, and the percentage of effectiveness for the anti-inflammatory test, respectively, was 51.35%, 74.15% and 74.01%. The results of the percentage inhibition of the analgesic test in mice for group II, III, group IV, group V were 55.25%, 38.52%, 44.53% and 49.31%, and the percentage of effectiveness for the analgesic test, respectively followed by 69.71%, 80.59% and 89.24%.

Conclusion: Based on the description above, it can be concluded that the decoction of the kepok banana peel has an anti-inflammatory and analgesic effect.

Keywords: anti-inflammatory, analgesic, kepok banana peel, *Musa acuminata x Musa balbisiana*

ABSTRACT 40

IONIC GELATED NANOPARTICLES EXTRACT OF TIN TREE BARK (*Ficus carica* L)

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ABSTRACT

Objective: Nanoparticles are a form of modification of drug delivery so that the drug can go directly to a specific area, while ionic gelation is a method in the manufacture of nanoparticles that involves a cross-linking process between polyelectrolytes in the presence of multivalent ions.

Methods: Gelationionic nanoparticles were formulated for fig bark extract using 1% chitosan as the polymer and 0.2% sodium tripolyphosphate as the multivalent anion, carried out by hardening liquid droplets dispersed in the oil or organic phase. The procedure includes mixing two liquid phases, a phase containing chitosan and a phase containing multivalent anions.

Results: Nanoparticles with a particle size of 438.7 nm, a zeta potential of 33.9 and a PDI of 0.279 were obtained.

Keywords: Nanoparticles; Ionic gelation; Bark of Tin Tree (*Ficus carica* L).

ABSTRACT 41

VIRTUAL SCREENING OF CHLOROGENIC ACID AND ITS DERIVATIVES ON GHRELIN RECEPTORS AS ANTIOBESITY

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ABSTRACT

Objective: The purpose of this study was obtained candidate antiobesity active compounds that act on ghrelin receptors and amino acids that play a role in these activities through virtual screening.

Methods: Virtual screening using PLANTS, YASARA, Marvin Sketch, and PyMOL software. The first step was receptor validation, and Root Mean Square Deviation (RMSD) was obtained at the ghrelin receptor with code 4AY9. The docking process was carried out on chlorogenic acid derrivatives and comparison compounds Bupropion and Naltrexon with Ghrelin receptor

Results: Validation results on ghrelin receptor with codes 6H3E, 4AY9 and IC88 have RMSD values of 2.6465; 1.7056; 1.805, respectively. The results of the docking scores of the comparison compounds bupropion and naltrexone (as a positive control) at the ghrelin receptor code 4AY9 were -53.1412. The docking scores for chlorogenic acid, quini acid and caffeic acid, 3-o-caffeoylquinic acid, 4-o- caffeoylquinic acid, 5-o- caffeoylquinic acid were -51.9988; -47,0056; -50.6871; -51.9808; -52.8248; -51.4806 (all inactive) respectively, and 3,4-di-o-caffeoyiquinic acid; 3,5-di-o-caffeoyiquinic acid; 4,5-di-o-caffeoyiquinic acid were -72.0975; -72.2821; and -65.8646 (all three compounds are active) respectively.

Conclusions: There are three chlorogenic acid derivatives that are active as anti-obesity at the ghrelin receptor, namely 3,4-di-o-caffeoyiquinic acid; 3,5-di-o-caffeoyiquinic acid; 4,5-di-o-caffeoyiquinic acid. The active sites of the ligand-bonded amino acid are LEU48 (Leucine), ASN156 (Asparagine), ASN52 (Asparagine), GLN50 (Glutamine), MET47 (Methionine), LYS44 (Lysine)

Keywords: Chlorogenic acid derivatives, ghrelin, antiobesity, virtual screening

ABSTRACT 42

QUALITY PARAMETERS AND DETERMINATION OF TOTAL FLAVONOID LEVELS FROM THE HIGHEST ANTIOXIDANT ACTIVITY OF ETHANOL 70% EXTRACT JACKFRUIT PEEL (*Artocarpus heterophyllus* L.) BY MACERATION, REFLUX, AND ULTRASONIC METHODS

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ABSTRACT

Objective: The aim of this study was to investigate and determination of total flavonoid levels from the highest antioxidant activity of ethanol 70% extract Jackfruit peel (*Artocarpus heterophyllus* l.) by maceration, reflux, and ultrasonic methods

Methods: Jackfruit peel were extracted by using maceration, reflux, and ultrasonic methods with 70% of ethanol as the solvent. Antioxidant activity using DPPH free radical scavenging, and determination of total flavonoid levels using colorimetric methods.

Results: The results of the antioxidant activity test were found in the maceration method with IC50 values 88.38±0.09 ppm, 106.73±0.64 ppm for reflux, and 139.88±3.76 ppm for ultrasonic. The results of quality parameters of the maceration method with the highest value of IC50 showed that the extract had a thick consistency, yellowish brown, aromatic smell and bitter taste, water soluble extract content was 61.19±0.03%, soluble ethanol extract content was 16.97±0.06%, loss on drying was 6.58±0.37%, water content was 4.09±0.06%, total ash content of 2.48±0.06%, acid insoluble ash content of 0.44±0.02%, water soluble ash content of 4.53±0.03%, solvent residue was 0.22 %, Pb metal contamination 0.37±0.02 mg/kg, Cd metal contamination 0.47±0.04 mg/kg, microbial contamination of the Total Plate Number and Yeast and Mold Count were too little to count, the total flavonoid content was 1.72±0.11%.

Conclusions: The results of phytochemical screening indicates that jackfruit peel contains flavonoids, saponins, tannin, and triterpenoids, the best antioxidant activity is found in the maceration method. The extract of Jackfruit peel fullfill the quality parameters requirements.

Keywords: Jackfruit peel, extraction methods, antioxidant activity, quality parameters, flavonoids

ABSTRACT 43

ISOLATION, IDENTIFICATION, AND ANTIBACTERIAL OF AMENTOFLAVONE FROM *Garcinia latissima* Miq. LEAVES

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ABSTRACT

Objective: In the present study, an attempt has been made to isolate and identify the *Bacillus subtilis* antibacterial compound present in the leaves of the *Garcinia latissima* Miq.

Methods: The extracts were obtained by maceration succesively, and active extract was fractionated by column chromatography. The isolation of the most active fraction was performed by open column chromatography and preparative thin layer chromatography. The isolate antibacterial assay against *Bacillus subtillis* by microdilution method. Compound structural identification of isolate active compound was identified by proton nuclear magnetic resonance method.

Results: The most active of the extracts from *Garcinia latissima* Miq. leaves against *Bacillus subtilis* is methanol extract. The most active of the fractions from *G. latissima* Miq. leaves methanol extract was isolated. The active isolate was identified as amentoflavone.

Conclusion: *G. latissima* Miq. leaves had the potential to be used as antibacterial medicinal herb and one of the isolates of *G. latissima* Miq. is amentoflavone (active against *b. Subtilis)*.

Keywords: *Garcinia latissima* Miq., *Bacillus subtilis,* amentoflavone,

ABSTRACT 44

NANOPARTICLES CONDITIONED MEDIUM ADIPOSE TISSUE MESENCHYMAL STEM CELL (CM-ATMSC)

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ABSTRACT

Objective: Stem cells have the potential to self-renew indefinitely and develop into adult cells of many lineages, making them valuable cell sources for tissue engineering. Mesenchymal stem cells (MSCs) are used as cellular carriers for the targeted delivery and local production of biologic medicines. However, stem cell therapy has limitations, and CM treatment has the potential to be used as an alternative therapy. Nanoparticles can improve the performance of MSC-based carriers for targeted drug delivery.

Methods: Adipose Tissue Mesenchymal Stem Cell (AT-MSC) was cultured with supplemented Modified Eagle Medium (MEM) Alpha in incubator with 37^{o}C and 5% of CO_2. The conditioned medium was collected when the cells were confluent. Nanoparticles were characterized by transmission electron microscopy (TEM), zeta potential analyzer (ZPA) test, loading capacity test, trapping capacity test, and drug release assay.

Results: CM-ATMSC nanoparticles have the smallest particle size, namely chitosan-inulin polymer of 128 nm, and the largest particle is chitosan-fucoidan of 254.3 nm. From the ZPA results, it is known that the resulting nanoparticle suspension is stable.

Conclusion: The resulting nanoparticle suspension was stable with the smallest CM-ATMSC nanoparticle in the size of 128 nm. The results show that the nanoparticles of CM-ATMSC have been successfully carried out.

Keywords: nanoparticles, drug delivery, conditioned medium, stem cells

ABSTRACT 45

IN-VITRO EVALUATION OF ANTIOXIDANT AND ANTI-ELASTASE OF *Baccaurea macrocarpa* AND *Terminalia catappa* LEAVES AND BARK

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ABSTRACT

Objectives: This present study was intended to explore elastase inhibition activity antioxidant from Tampoi (*Baccaurea Macrocarpa* L.) and Ketapang (*Terminalia Catappa* L.) leaves and bark which had the potential to be used as an anti-aging agent for cosmetics and nutraceuticals.

Methods: The leaves and bark of Tampoi and Ketapang were extracted by reflux method using 96% ethanol. The antioxidant activity test was carried out using the DPPH method and the absorption was measured by a spectrophotometer at a wavelength of 516 nm. Then, the anti-elastase was tested by in vitro test using a microplate reader at a wavelength of 405 nm.

Results: The ethanol extract of leaves and bark from Tampoi and Ketapang contain flavonoid, quinone, tannin, and steroids. Antioxidant activity of tampoi leaves, tampoi bark, Ketapang leaves, and Ketapang bark had IC_{50} values were respectively 15.09±0.51; 22.89±1.51; 36.43±1.94; 39.23±1.76 ppm. The anti-elastase activity of tampoi leaves, tampoi bark, ketapang leaves, and ketapang bark had IC_{50} values were respectively 48.86±2.29; 52.03±9.54; 44.42±4.53; 40.16±1.32 ppm. The best potential of anti-elastase activity could be seen from the smaller IC_{50} value, the greater the inhibitory activity against elastase.

Conclusion: It may be concluded that ethanol extract of tampoi and Ketapang leaves and bark had an anti-elastase and antioxidant activity which had potential as an anti-aging agent.

Keywords: Tampoi, Ketapang, antioxidant, anti-elastase, anti-aging, Indonesian native plant.

ABSTRACT 46

APPLYING NANOPARTICLE TECHNOLOGY IN MAKING STANDARDIZED EXTRACT OF AFRICAN LEAVES (*Vernonia amygdalina* Del.) TO LOWER BLOOD GLUCOSE LEVEL BY *IN VIVO*

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ABSTRACT

Objective: The purpose of this study was to make a safe, fine, and efficacious formulation of nanoparticles from African leaves ethanolic extract which can lower the blood glucose levels in vivo.

Methods: The making of 96%, 70% and 50% ethanolic extracts of African leaves was done by maceration method then concentrated using a rotary evaporator to obtain a thick extract, then re-macerated once again. This research was divided into two major stages, namely the preliminary test and the advanced test. In the preliminary test, optimization was carried out first on 96%, 70%, and 50% ethanol extracts of African leaves by maceration method then the results of the antihyperglycemic activity test were measured using a glucometer (GlucoDr), the blood collection was carried out through rat tails. From the first stage, it was shown that the 50% ethanolic extract of African leaves had the most effective antihyperglycemic activity even though the ethanol concentration was small. The 50% ethanolic extract of African leaves was made into nanoparticles by ionic gelation method. The evaluation of nanoparticle suspension included the organoleptic, particle distribution, and zeta potential. The spray drying was done by adding maltodextrin filler to obtain nanoparticle powder. The evaluation of nanoparticle powder included organoleptic, moisture content, and particle morphology using SEM (*Scanning Electron Microscope*). Furthermore, the advanced tests of antihyperglycemic activity in vivo were carried out on the nanoparticles extract.

Results: The results showed that the ethanolic extracts of African leaves meet the non-specific and specific quality requirements. The secondary metabolites contained in the simplicia and in the ethanolic extracts of African leaves are alkaloids, saponins, tannins, phenolics, flavonoids, triterpenoids, steroids, and glycosides. The total flavonoid content in the 96%, 70%, and 50% ethanolic extracts and in the nanoparticles extract powder was 6.14%; 6.66%; 6.49%, and 3.11% respectively. The results show that the average particle size of the nanoparticles was 397.8 nm, the polydispersity index was 0.210, and the zeta potential was -31.0 mV. The nanoparticles of standardized extract of African leaves have antihyperglycemic activity at a dose of 76.375 mg/kg BW; 38.188 mg/kg BW, and 19.094 mg/kg BW and there is no significant difference ($P>0.005$) when compared to the positive control in terms of the resulting decreasing effect.

Conclusion: The nanoparticles standardized extract of African leaves (*Vernonia amygdalina* Del.) meet quality requirements and can reduce blood glucose levels.

Keywords: African leaves; *Vernonia amygdalina Del.*; nanoparticles; blood glucose levels; *in vivo*

ABSTRACT 47

ANALYSIS OF MULTIDRUG RESISTANT TUBERCULOSIS RISK FACTOR AT REGIONAL PUBLIC HOSPITAL OF SURAKARTA PERIOD 2017-2019

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ABSTRACT

Objective: Tuberculosis (TBC) is one of the chronic diseases that become one of health priority in the world. Indonesia have target in year 2035 that TBC morbidity and mortality reduce by 90% dan 95%, respectively. The challenge to achieve this target is the presence of antituberculosis drug resistance. Aim: This study was done to determine the risk factors for multidrug resistant tuberculosis (TB-MDR) at regional public hospital of Surakarta.

Methods: This study was a case-control study with retrospective descriptive analytical study design based on medical record data of TBC patients. For the case group, the patients were diagnosed with MDR-TB based on the Rifampicin Resistant Molecular Rapid Test and had a history of the first-line TBC treatment. For the control group, the patients were diagnosed with non-MDR-TB based on the Rifampicin Sensitive Molecular Rapid Test and had a completed first-line of TBC treatment.

Results: The total samples were 93 patients for each group. The data were analyzed descriptively and statistically (chi square) with a significance level of 95%. The results showed that the patients sociodemographic of last education in junior high school (p=0.007, OR=8.974 CI 1.792-44.949), labor employment (p= 0.026, OR=18.200 CI 1.761-188.069), and health insurance ownership (p= 0.001) had a significant relationship with the incidence of MDR-TB. Beside than sociodemographic status, patients with clinical characteristics of failed first-line TBC treatment history (p= 0.000, OR= 32,170 CI 4,214-245,588) and drop out TBC treatment status (p= 0,000, OR= 13,787 CI 1,727-110,043) also had a significant relationship with the incidence of MDR-TB.

Conclusion: The factors that related to the incidence of MDR-TB are education, occupation, health insurance ownership, and the history of first-line TBC treatment.

Keywords: Risk factor, MDR-TB, Regional Public Hospital of Surakarta

ABSTRACT 48

SYNTHESIS AND CHARACTERIZATION OF CHITOSAN FROM CRAFT SHELL WASTE AND ITS APPLICATIONS AS EDIBLE COATING TO INCREASE FRUIT SHELF LIFE

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ABSTRACT

Objective: Strawberry is a fruit which has high economic value, but strawberries are a perishable fruit. Therefore, required proper postharvest handling, one of them is using edible coating from chitosan. Chitosan that synthesis from crab shells waste will be a solution to prevent environmental pollution because of the abundance of crab shell waste. The purpose of this research was synthesis and characterization of chitosan from craft shell waste and its applications as edible coating to increase strawberries fruit shelf life.

Methods: The synthesis of chitosan has done using batch method with sequentially processes were demineralization, deproteination, decolorization and deacetylation using acid-base solution. Characterization has done including chitosan yield, water content, ash content, viscosity, pH and degree of deacetylation. The synthesized chitosan was formulated as an edible coating and tested for its antimicrobial activity, then used for edible coating on strawberries with a deep coating method and visual and organoleptic analysis of shelf life.

Results: The results of synthesis obtained 72,76% of chitosan yield with characteristics water content 6,31%, ash content 0,96%, viscosity 68,19 cps, pH 7,01 and degree of deacetylation 80,17%. The average diameter of chitosan edible coating formulated with concentrations of 0.5%, 1%, 1.5%, and 2% were 7.62 cm, 10 cm, 14.27 cm, and 19.47 cm respectively. Chitosan edible coating can extend the shelf life of strawberries 5 days longer at room temperature and 14 days longer in the refrigerator than control.

Conclusion: Chitosan from crab shell waste can be formulated into edible coating and can increase the shelf life of strawberries.

Keywords: chitosan, crab shell waste, edible coating, strawberries

ABSTRACT 49

INHIBITION α-GLUCOSIDASE ENZYME THE EXTRACT AND NANOPARTICLES OF KEMBANG BULAN LEAF (*Tithonia diversivolia (Hamsley*) A. Gray) *IN VITRO*

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ABSTRACT

Objective: Diabetes mellitus is a disease of decreased secretion or insulin resistance due to metabolic abnormalities that cause an increase in blood glucose levels (hyperglycemia). The enzyme α-glucosidase plays a role in the hydrolysis of carbohydrates to glucose and other monosaccharides inhibition of this enzyme causes inhibition of glucose absorption. One of the efforts to increase the effectiveness of the *Tithonia diversifolia* leaves can be increased by forming extract nanoparticles. The purpose of this study was determination of quality parameters, antidiabetic activity test of 70% ethanol extract and nanoparticle extract of *Tithonia diversifolia* leaves.

Methods: Identification of metabolite seconder has done with phytochemical screening. The quality parameter of extract was determined by specific and nonspecific parameter according to the regulation.

Results: showed the presence of flavonoids, saponins, tannins, essential oils, coumarin, steroids and triterpenoids. The results of quality parameter examination showed that the extract had a thick consistency, blackish brown color, aromatic odor. water soluble compounds is 75.20% and dissolved compounds in ethanol is 71.77%, loss on drying 9.65%, water content 8.73%, residual solvent is 0.43%, the total ash content is 7.12%, the acid insoluble ash content is 0.93%, the Pb level is 0.1167 mg/kg, the Cd level is 0.0620 mg/kg, microbial contamination were the total plate count is $0,6827x10^3$ and mold and yeast count $0,156x10^3$. Total flavonoid levels were 1.15%.

Conclusion: The test results can be concluded that the 70% ethanol extract and nanoparticle extract from *Tithonia diversifolia* leaves can inhibit the activity of the α-glucosidase enzyme and the inhibitory results obtained by nanoparticle extract are greater than 70% ethanol extract

Keyword: *Tithonia diversivolia* (Hamsley) A. Gray, 70% ethanol extract, nanoparticle, α-glucosidase enzym

IMMUNOMODULATOR ACTIVITY OF *Ziziphus spina- christi* L. LEAVES EXTRACT BASED ON PHAGOCYTOSIS ACTIVITY IN RATS

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ABSTRACT

Objective: Arabic bidara (*Ziziphus spina-christi* L.) contains a flavonoid. Flavonoid has properties to improve the human immune system and has the potential as immunomodulators. The purpose of this study was to obtain the immunomodulator activity of *Ziziphus spina-christi* L. leaf extract based on phagocytosis activity in male white rats.

Methods: *Ziziphus spina-christi* L. leaves were macerated with 70% ethanol for 24 hours. The rats were divided into 6 groups, where each group consisted of 4 rats. Group was treated with water as a normal control (group I), suspending agent (carboxymethyl cellulose sodium) as a negative control (group II), *Phyllanthus niruri product* as a positive control (group III), and *Ziziphus spina-christi* L. leaf extracts at a dose of 100, 200, and 400 mg/kgBW (group IV-VI) for 7days. On the 8th day groups II-VI were infected with *S. aureus*.

Results: The results showed that there was an increase in phagocytic activity with increasing extract dose and higher activity than negative control group. This indicates that the extracts have activity as an immunomodulator. Its activity was lower than that of *P. niruri* products. *P. niruri* products phagocytosis activities were 83,5% for activity and 601,75 for capacity which calculated against 100 macrophages.

Conslusion: Based on these results, *Ziziphus spina-christi* L. leaves extract have immunomodulatory activity, but its immunomodulatory activity was lower than that of *P. niruri* products.

Keywords: *Ziziphus spina-christi* L., immunomodulatory, phagocytosis, macrophages.

ABSTRACT 51

MICROENCAPSULATION OF INDONESIAN POLYMER BIODIVERSITY IN WARTHON'S JELLY MESENCHYMAL STEM CELL (WJMSC)

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ABSTRACT

Objective: WJMSC is a stem cell derived from Wharton's Jelly the umbilical cord of pregnant women which has the ability to differentiate into other cells that are osetogenic, myogenic, neurogenic, and hematopoietic. Stem cell microencapsulation is a cell coating technique that is expected to act as a delivery vehicle. This study aims to make stem cell microencapsulation using various types of natural polymers.

Methods: WJMSC (Wharton's jelly mesenchymal stem cell) was cultured with supplemented Modified Eagle Medium (MEM) Alpha in incubator with 37^{o}C and 5% of CO_2. We investigated various of natural polymers (chitosan, glucomannan, inulin, fucoidan and amylopectin) in WJMSC microencapsulation. Viability cell of WJMSC microencapsulate was measured using MTS (3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxy-phenyl)-2-(4-sulfophenyl)-2H tetrazolium) assay, and the condition medium (CM) was determined the measure EGF, IL-6, VEGF with ELISA.

Results: WJMSC microencapsulation using chitosan, glucomannan, inulin, fucoidan and amylopectin shows viability cell up to 100%. The EGF, IL-6, VEGF levels was increased in all tested polymers compared to negative control.

Conclusion: Tested polymers (chitosan, glucomannan, inulin, fucoidan, amylopectin) were not toxic to WJMSC and cell microencapsulation was successfully carried out.

Keywords: WJMSC, microencapsulation, polymers, stem cells, drug delivery.

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