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1ST MICPS

MAKASSAR INTERNATIONAL CONFERENCE ON PHARMACEUTICAL SCIENCES

Faculty of Pharmacy
Universitas Muslim Indonesia

"Empowering Natural Products In Drugs Discovery and Development"

MICPS 2021
MAKASSAR, INDONESIA, SEPTEMBER 25-26 2021

ABSTRACT BOOK

PRESENTED BY:
IN COLLABORATION WITH :

1st Makassar International Conference on Pharmaceutical Sciences
(MICPS 2021)
Makassar, Indonesia
September 25-26, 2021

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(MICPS 2021)

Makassar, Indonesia

September 25-26, 2021.

In submitting Conference Proceedings to this special issue of Journal of Pharmacy & Pharmacognosy Research (JPPRes), we certify to the Publisher that we adhere to the Editorial Policy of JPPRes in order to safeguard a good scientific practice in publishing.

Moreover, we manifest that all articles have been subject to peer review administered by the proceeding's editors. Also, reviewers have been conducted by expert referees, who have been requested to provide unbiased and constructive comments aimed, whenever possible, at improving the work. Proceeding's editors have taken all reasonable steps to ensure the quality of the materials they publish and their decision to accept or reject a paper for publication has been based only on the merits of the work and the relevance to the journal.

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Muammar Fawwaz, Ph.D.
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PREFACE

The Faculty of Pharmacy was established in 2001 and become the 12th faculty in the Universitas Muslim Indonesia (UMI), Makassar, Indonesia. Faculty of Pharmacy manages 2 programs: bachelor of pharmacy and pharmacist education.

The Faculty of Pharmacy contributes to improving the quality of life for the local community by applying the research results and those researches were published in the high impact factor journal as the aim of the Faculty of Pharmacy to increase the quality and number of publications. Therefore, the Faculty of Pharmacy as organizer proudly present the 1st Makassar International Conference on Pharmaceutical Sciences (MICPS) 2021. The areas of pharmaceutical sciences are a group of interdisciplinary topics of study concerned in pharmaceutical chemistry, pharmacognosy and phytochemistry, pharmacology and clinical pharmacy, pharmaceutical microbiology, pharmaceutics and health sciences.

The 1st MICPS aims to provide a platform for academics, researchers, professionals, administrators, educational leaders, policymakers, industry representatives, advanced students, and anyone in the domain of interest from around the world to discuss pharmaceutical sciences. Also, the conference purposes to publish a complete and reliable source of information on pharmaceutical sciences and practices with a strong emphasis on originality and scientific quality.

We welcome proposals for papers and invitations for abstract submissions are now open for oral presentations covering current research and new processes. All contributions should be of high quality. During the review period, papers will be reviewed by eminent scholars in the respective areas.

apt. Rachmat Kosman, S.Si, M.Kes.
Dean of Faculty of Pharmacy
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CONFERENCE PROGRAM

RUNDOWN OF INTERNATIONAL CONFERENCE

Topic: Empowering Natural Product on Drug Discovery and Development.

Sunday, 25 September 2021

TIME (WITA / GMT+8)	AGENDA
08.30 – 09.00	Open room Zoom
09.00 – 09.10	Opening by Master of Ceremony (MC)
09.10 – 09.30	Reciting Al-Quran
09.30 – 09.45	Committee report
09.45 – 11.00	Welcome speech by: Dean of Faculty of Pharmacy UMI
11.00 – 11.30	Rector of Universitas Muslim Indonesia
11.30 – 12.00	Closing

RUNDOWN OF INTERNATIONAL CONFERENCE

Topic: Empowering Natural Product on Drug Discovery and Development.

Sunday, 26 September 2021

TIME (WITA / GMT+8)	AGENDA
07.30 – 08.00	Open room Zoom
08.00 – 08.30	Opening speech: - Committee - Dean of Faculty of Pharmacy UMI
08.30 – 09.00	Section I Speaker I: Prof. Abdul Mun'im, Ph.D. Moderator: apt. Muammar Fawwaz, Ph.D.
09.00 – 09.20	Question and Answer
09.20 – 09.50	Section II Speaker II: Assoc. Prof. Kyoko Nakagawa-Goto, Ph.D. Moderator: apt. Faradiba, Ph.D.
09.50 – 10.10	Question and Answer
10.10 – 10.40	Section III Speaker III: Assoc. Prof. Waranyoo Phoelcharoen, Ph.D. Moderator: apt. Aktsar Roskiana Ahmad, Ph.D
10.40 – 11.00	Question and Answer
11.00 – 11.30	Section IV Speaker IV: Assoc. Prof. Dr. Shamima Binti Abdul Rahman Moderator: apt. Nurmaya Effendi, Ph.D
11.30 – 12.00	Question and Answer
12.00 – 13.00	Break and Prayer time (Salat)
13.00 – 13.30	Section V Speaker V: Assoc. Prof. Kenneth Thermann Kongstad, Ph.D. Moderator: apt. Abdul Malik., Ph.D.
13.30 – 13.50	Question and Answer

RUNDOWN OF ORAL PRESENTATION

Sunday, 26 September 2021

TIME	EVENT
14.00 – 14.30	Open room Zoom
14.30 – 16.15	Section of oral parallel presentation in 8 zoom rooms consist of several scopes including: Pharmaceutical Chemistry (PCH) Pharmacognosy and Phytochemistry (PP) Pharmacology and Clinical Pharmacy (PCL) Pharmaceutical Microbiology (PM) Pharmaceutics (P) Health Sciences (HS) Moderators: 1. Faradiba, Ph.D. 2. Nurmaya Effendi, Ph.D. 3. Abd. Malik, Ph.D 4. Muammar Fawwaz, Ph.D 5. Ririn, M.Sc. 6. Aktsar Roskiana Ahmad, PhD. 7. A. Maulana P. Lolo, M.Chlin Pharm. 8. Rizqi Nur Azizah, M.Si
16.15 – 16.30	Announcement of best oral presentation of all scopes and also certificate reviewer, best presenter, presenter. Event closing and oral presentation presented by Dean of Faculty of Pharmacy UMI

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Conference Proceedings
1st Makassar International Conference on Pharmaceutical Sciences (MICPS 2021).
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ABSTRACTS

MICPS1-001-HS: ASSESSING MENTAL HEALTH ISSUES OF THE ROHINGYA FEMALE REFUGEES ATTENDING IMARET MOBILE CLINIC

Ahmad Rashidi Mohamed Tahir[1,2*], Rosnani Hashim[1], Suhaila Hanis[1] , Faridah Hanim Islahudin[2], Noor Azlin Abdul Halim[3]

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Context: The Rohingyan people in Myanmar are a severely persecuted minority ethnic group constituting one of the largest stateless ethnic groups; thousands of them reside in refugee camps in south-eastern Bangladesh. There have been few studies on the Rohingya people's mental health issues caused by persecutions, wars, and other historical trauma, nor has the role of daily environmental stressors associated with continued displacement, statelessness, and life in their refugee camps been thoroughly studied.

***Aim*:** To assess the prevalence of psychological distress of female Rohingya refugees and investigate how the demographic factor was associated with the mental health status of the female Rohingya refugees currently residing in Malaysia.

***Method*:** A cross-sectional study among the refugees whose ages ranged from 18 to 65 years old was conducted using a convenience sampling. All respondents were female Rohingya refugees who were 18 years old or older. WHO-UNHCR ASSESSMENT SCHEDULE OF SERIOUS SYMPTOMS IN HUMANITARIAN SETTINGS (WASSS) toolkit was used as a tool measuring and reporting the mental health symptoms and impaired functioning, and responses to the questions obtained from the assessment questionnaire were analyzed in accordance with the recommendation provided by the toolkit. These questions were aimed at seeking responses to the statements, addressing any feelings of fear, anger, fatigue, disinterest, hopelessness, or distress during the two-week period prior to the interview.

***Results*:** Responses to the specific mental health symptoms were analyzed, and the percentages were calculated based on the presence of each of these symptoms. 90 female refugees participated in this study. The prevalence of psychological distress of those female Rohingya refugees was 53.3%. Several factors associated with mental health statuses, such as employment status, were found. Unemployed female refugees showed a higher prevalence of psychological distress.

Conclusion: Environmental stressors such as lack of employment rights had affected mental health outcomes and produced psychosocial outcomes, so they themselves became a stressor such as social isolation. Efforts such as planning, implementing or researching the mental health and psychosocial support considerations should be made for any programs in humanitarian crises, particularly in situations in which forced displacement takes place with the refugees in order to mobilize the individual and collective strengths of the Rohingya refugees and build on their resilience.

Keywords: Mental health; psychological distress; Rohingya female refugees; toolkit.

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MICPS1-002-HS: POSTPRANDIAL BIOASSAY AND RADICAL SCAVENGING ON A *N*-HEXANE FRACTION OF *CORDIA MYXA* L. LEAF

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Context: *Cordia myxa* L. is empirically used as an antidiabetic drug.

Aim: This study aimed to determine the *in vivo* effects of *C. myxa* n-hexane fraction on the reduction in a blood sugar level and their relations to the anti-free-radical activity assay by employing 1,1-diphenyl-2-picrylhydrazyl (DPPH).

Method*:* The n-hexane fraction of *C. myxa* was used as a sample in the post-prandial assay analyzed by employing an ANOVA statistical test followed by a *post-hoc* test.

Results: There were significant advantages in the extract with a 500 mg dose. Based on the results of the anti-free-radical tests using DPPH, it was found out that the maximum wavelength was 516 nm, and the value was 16.49 µg/mL IC_{50}. As a comparison, quercetin with 0.13 µg/mL IC_{50} was employed. It was found out that the sample had such a strong, anti-free radical inhibitory potential ranging from 10 µg/mL to 50 µg/mL.

Conclusion: There was a correlation between the effects of a lowered high blood sugar level and anti-free radical activities.

Keywords: DPPH; free radical; *Cordia myxa*; IC_{50}.

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Conference Proceedings
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MICPS1-004-PCL: CRIMINAL RESPONSIBILITY OF THE PHARMACIST IN PHARMACEUTICAL SERVICE IN INDONESIA

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Context: Medical service is a legal relationship between a medical service provider and a medical service recipient (patient), both of whom are traditional subjects, which have rights and obligations to one another

Aim: To ensure legal certainty in pharmaceutical practice according to the provisions of laws and regulations and to ensure criminal law sanctions for pharmacists in pharmaceutical practices that lead to criminal acts.

Methods: The research method used is qualitative empirical normative research with a literature study. In addition, this research was conducted qualitatively based on data triangulation which resulted from three ways: 1) interview, 2) participant to observation, and 3) review of organizational records (document records). In qualitative research, data collection usually uses observation, documentation, and interview methods. This study discusses legal provisions related to health and pharmaceutical services and interviews with ten people at *BLU* dr. Wahidin Sudirohusodo Makassar and five people from Wamena Regional General Hospital, Jaya Wijaya Regency, Papua

Results: The implementation of a pharmacist's practice was based on the prevailing laws and regulations starting from planning, procurement, storage, distribution, evaluation, and provision of drug information and monitoring of drug side effects based on Government Regulation No. 51 of 2009 Article 4, which stated to protect patients and the public in obtaining and stipulating pharmaceutical preparations and pharmaceutical services; maintain and improve the quality of implementation of pharmaceutical work by using developments in science and technology as well as laws and regulations; and provide legal certainty for patients, communities, and pharmaceutical workers.

Conclusion: In the criminal responsibility of pharmacists in pharmaceutical services that have resulted in illegal acts, there have not been cases that have reached court proceedings. Still, there are cases where actions that have resulted in criminal acts have occurred in the field, but they can be resolved by mediation to reach a consensus with unique mediation.

Keywords**:** criminal responsibility; pharmacist; safety service.

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MICPS1-006-PCH: ANTIOXIDANT ACTIVITY AND CAROTENOID CONTENT OF *LITOPENAEUS VANNAMEI* SHELL EXTRACT

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Context: Shrimp shells of the *Litopenaeus vannamei* species become industrial waste in Indonesia. Thus efforts are needed to process the waste to be of high economic value. Currently, the processing of shrimp shell waste is limited to produce chitin and chitosan even though there are a lot of potentials that can be developed from this shrimp waste.

Aim: To determine the antioxidant activity and the total carotenoid content of the n-hexane extract of *L. vannamei* shrimp shell.

Method: Determination of antioxidant activity was carried out based on the Ferric Reducing Antioxidant Power (FRAP) method and the 1,1-diphenyl-2-picryl-hydrazyl (DPPH) method. Meanwhile, for the determination of total carotenoid levels, the β-carotene standard was used. The instrumental method used in this research was the UV-Visible Spectrophotometry method.

Results: The n-hexane extract of *L. vannamei* shell had an antioxidant activity based on the FRAP method of 1.65 mgQE/gram extract. Meanwhile, the DPPH method shows an IC_{50} of 27.59 g/mL. The level of β-carotene obtained was 5.87 mg/g extract.

Conclusion: It can be concluded that the n-hexane extract of *L. vannamei* shrimp shell has the potential as a source of natural antioxidants and carotenoids.

Keywords: DPPH; FRAP; natural sources; shells.

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MICPS1-007-PP: ANTIOXIDANT ACTIVITIES OF ENDEMIC HERBS CEMBA (*ACACIA RUGATA* (LAM.) FAWC. RENDLE) ORIGINATING FROM THE REGENCY OF ENREKANG

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Context: The cemba [*Acacia rugata* (Lam.) Fawc. Rendle] belongs to the *Acacia* genus. The *A. rugata* leaves have long been used as a spicy in various traditional gourmets in the regency of Enrekang since it has many beneficial effects on people's health.

Aim: Assaying the antioxidant potential of *A. rugata* leaves.

Method: The antioxidant activities were determined by employing a scavenging free radical 1,1-diphenyl picryl hydrazine (DPPH), and the phenolic content was determined by employing gallic acid (GA) as a standard.

Results: The scavenging free radical amounted to about IC_{50} 20.96 µg/mL, and the phenolic content amounted to 51.533 mg GAE/g.

Conclusion: The extract of *A. rugata* leaves could serve as an antioxidant.

Keywords: *Acacia rugata*; antioxidant; cemba; enrekang.

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Conference Proceedings
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MICPS1-008-PCL: ADMINISTERING METFORMIN TO LOWER THE TOTAL CHOLESTEROL LEVEL OF THE PATIENTS AT THE CARDIAC POLYCLINIC OF UNDATA HOSPITAL OF PALU

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Context: Type 2 diabetes mellitus is a disorder characterized by a high blood glucose level caused by either an insufficient production of insulin or the resistance in the insulin receptors or both of them. Metformin is the first-line therapy employed to lower the blood glucose level. Moreover, in some cases, metformin has proven to be capable of decreasing the total cholesterol level.

Aim: To determine the effects of metformin consumption on the total cholesterol levels of type 2 diabetes mellitus patients at the Cardiac Polyclinic of Undata Hospital of Palu.

Method: Employed was a prospective cross-sectional study method, with the total cholesterol level measured before and after a three-month consumption of metformin in single-use or combined therapy. Moreover, the total cholesterol level was analyzed by employing a Wilcoxon statistical trial.

Results: The result was 0.114, or the p-value was greater than or equal to 0.05. Based on the result, it was found out that the consumption of metformin in a single-use or a combined therapy did not significantly lower the total cholesterol levels. However, on average, the total cholesterol levels of the patients had fallen by 3.5% in that, in the initial measurement, the average total cholesterol level was 174.96 mg/dL, and in the final measurement, the total cholesterol level was 168.83 mg/dL. Therefore, it is worth administering metformin for type 2 diabetes mellitus patients with a cardiovascular disorder.

Keywords: metformin; type 2 diabetes mellitus; total cholesterol level; Undata Hospital.

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Conference Proceedings
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MICPS1-009-HS: THE IMMUNOSUPPRESSIVE EFFECTS OF A SECANG WOOD (*CAESALPINIA SAPPAN* L.) EXTRACT ON *DROSOPHILA MELANOGASTER*

Nur Rahma Rumata[1,2*], Emil Salim[3,4], Subehan[1], Nadila Pratiwi[1], Reski Amalia Rosa[1], Elly Wahyudin[1], Latifah Rahman[1], Gemini Alam[1], Firzan Nainu[1*]

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Context: Secang heartwood (*Caesalpinia sappan* L.) is an Indonesian traditional medicinal plant potentially used as an immunomodulating agent.

Aim: To investigate the *in vivo* immunosuppressive effects of a *C. sappan* ethanol extract (CSE) by employing a *Drosophila melanogaster* platform. In this study, a phytochemical screening of CSE, a phenotypical analysis of the lifespan, locomotor, and reproductive activities of *D. melanogaster*, and a molecular investigation of *Dpt, Drs,* and *TotA,* and three mammalian-conserved immune-related genes in *D. melanogaster* were conducted.

Results: A CSE contained alkaloids and flavonoids. Phenotypically, a CSE did not impact any locomotor activities and the lifespan of wild-type *D. melanogaster*. However, it increased the number of offspring. Interestingly, a CSE improved the survival and reproductive profiles of a PGRP-LB mutant and an established chronic inflammation model in flies, probably via the inhibition of *Dpt, Drs,* and *TotA* expressions.

Conclusion: The immune-suppressive effects of a CSE could prolong the lifespan of flies with several autoinflammatory signatures and provide a hint that a CSE might potentially serve as a traditional medicine used to treat the hyperactivation of some immune system conditions such as allergies and autoimmune diseases.

Keywords: *Caesalpinia sappan*; *Drosophila*; immunosuppressant; NF-κB; survival.

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Conference Proceedings
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MICPS1-010-P: PHYSICAL STABILITY AND EFFECTIVENESS OF SNAKEHEAD FISH MUCUS AS WOUND DRESSING ON ANIMAL MODELS OF DIABETES MELLITUS

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Context: Snakehead fish (*Channa striata*), freshwater fish, has a high protein content which is efficacious as wound healing for diabetes mellitus wounds. The mucus of the snakehead fish also contains protein that could be used as an active compound to treat diabetes mellitus wounds.

Aim: To determine the physical stability and the effectiveness of the wound dressing formula of snakehead fish mucus in animal models of diabetes mellitus.

Method: The experimental laboratory used a wound dressing formula with 5%, 10%, and 15% concentrations using 5 groups of animal models. Each group consisting of 5 animal models. The analysis was performed by an established method in our laboratory along with the statistical analysis.

Results: The wound dressing formula was physically stable and at a concentration of 15%, which had a fast-wound healing process.

Conclusion: The wound dressing formula of snakehead fish mucus was physically stable and effective for healing diabetes mellitus wounds in animal models. Therefore, the mucus of snakehead fish could be developed as active material in managing diabetes mellitus cases.

Keywords : diabetes mellitus; physical stability; snakehead fish mucus; wound dressing.

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MICPS1-011-PCL: SAFETY ASSESSMENT OF THE EFFECTS OF STATIN DRUG INTERACTIONS ON THE CARDIOVASCULAR OUTPATIENTS

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Aims: To evaluate the interactions between statin drugs and the concomitant drugs on cardiovascular outpatients.

Method*s*: The study was conducted in a prospective cohort. The interactions between the drugs were observed by using a Lexicomp® Drug Interactions software. The patients' complaints were taken during the interviews.

***Results*:** There were 69 patients included in the study sample. 16 patients received atorvastatin, and 53 patients received simvastatin. More than half of the patients (59%) underwent drug-drug interactions. Most of the drug interactions were major interactions (41%), the second greatest was minor interactions (22%), and the smallest was moderate interactions (10%). The most interacting drugs were amlodipine and diltiazem. Based on the interview results, it was found out that no patients had myopathy complaints.

Conclusion: It was still worth considering the effects of drug interactions on the patients, although they did not have any myopathy complaints in this study. Several factors might impact on any drug interactions that the patients did not experience.

Keywords*:* DDIs; drug interactions; myopathy; rhabdomyolysis; statin.

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MICPS1-012-PCL: EVALUATING THE USE OF MAGNESIUM SULFATE (MGSO4) AS AN ANTI-SEIZURE THERAPY ON THE PATIENTS WITH SEVERE PREECLAMPSIA AT THE INPATIENT UNIT OF RSIA KHADIJAH 1 MAKASSAR FOR THE 2019-PERIOD

Nurhikma Awaluddin[1*], Nurjannah Bachri[2], Sri Wahyuningsih[1]

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Context: Preeclampsia is a clinical syndrome appearing after a 20-week gestation characterized by hypertension and proteinuria occurring due to pregnancy. Magnesium sulfate can potentially be used as an anti-seizure. It has therapeutic rationale with the right parameters of indication (100%), right drug (100%), right patient (100%), and right dose (100%).

Aim: To evaluate the rationality of using magnesium sulfate therapy for patients with severe preeclampsia as an anti-seizure in the Inpatient Installation of Khadijah 1 Makassar Priode Hospital in 2019.

Method: The study was a non-experimental (observational) type of study with the data collected retrospectively. Sampling was taken by evaluating the rationale of treatment. The number of patients serving as the samples was 198, 67 of whom met the inclusion criteria after applying Slovin's formula.

Results: The 67 sample patients with severe preeclampsia received magnesium sulfate as an anti-seizure therapy, and the rationality parameters for the right indication, the right dose, the right patient, and the right dose were 100%, respectively.

***Conclusion*:** The rationality of the therapy using magnesium sulfate with the right parameters for the indication, the right drug, the right patient, the right dose was 100%, so it was in accordance with the literature standards of the 2016 Indonesian Obstetrics and Gynecology Association (POGI) and the Formulary of RSIA Khadijah 1 Makassar serving as the reference.

Keywords: magnesium sulfate; preeclampsia; therapeutic rationale.

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MICPS1-013-PCH: DETERMINING THE CONTENTS OF PHENOLICS AND FLAVONOIDS AND α-GLUCOSIDASE INHIBITOR ACTIVITIES IN AN ETHANOL EXTRACT OF THE TAMARIND LEAVES (*TAMARINDUS INDICA* L.)

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Context: One of the plants that have medicinal properties is tamarind (*Tamarindus indica* L.). Tamarind leaves contain various groups of compounds, including terpenoids, phenolics, flavonoids, and organic acids. Phenolics are secondary metabolites acting as antioxidants. Moreover, flavonoids have a hypoglycemic activity by inhibiting the α-glucosidase enzyme playing an important role in breaking down the carbohydrates into the monosaccharides. Inhibiting the α-glucosidase enzyme is one of the therapies used for type II diabetes mellitus patients.

Aim: To determine the levels of phenolics and flavonoids and test the α-glucosidase inhibitor activity in an ethanol extract of the tamarind leaves.

Method: Tamarind leaf was extracted by employing a maceration method using a 96% ethanol solvent. The qualitative analysis was conducted by using $FeCl_3$ reagent, mg powder, and HPLC. Meanwhile, the quantitative analysis of phenolic and flavonoid levels was conducted using a UV-Vis spectrophotometry method; meanwhile, gallic acid and quercetin were used as a comparison. To test the activity of α-glucosidase inhibitor, we employed an ELISA reader.

Results: The level of total phenolics in an ethanol extract of the tamarind leaves was 139.922 mgGAE/g, and the flavonoids content was 16.803 mgQE/g. Moreover, the value of the α-glucosidase inhibitory activity enzyme IC_{50} was 52.04 g/mL.

Conclusion: An ethanol extract of the tamarind leaves has a higher total phenolic content than the total flavonoid content. Moreover, it had the ability to inhibit the a-glucosidase enzyme.

***Keywords*:** flavonoids; α-glucosidase inhibitor; phenolics; *Tamarindus indica* L.

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MICPS1-014-PCL: ACTIVITIES OF AN EXTRACT OF *SYZYGIUM POLYANTHUM* LEAVES AS A NEPHROPROTECTIVE AGENT IN GENTAMICIN-INDUCED RATS

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Context: The kidney is part of the organs forming the urinary system of the human body. Impaired kidney function can be caused by inflammation and xenobiotic toxin. Gentamicin is an aminoglycoside class of antibiotic used to treat infections caused by gram-negative bacteria. *Syzygium polyanthum* leaves contain compounds of phenol, flavanoids, saponins, and tannins, acting as an antioxidant.

Aim: To determine nephroprotective activities of an ethanol extract of *S. polyanthum* leaves in gentamicin-induced rats.

Method: This study was conducted using 20 lab rats, which were divided into 5 groups, namely normal control groups, negative control groups, and extract groups with doses amounting to 125, 250, and 500 mg/kg BW, respectively. All groups were expectedly induced with gentamicin dose 80 mg/kg BW intraperitoneally for 8 days like the normal control group. The therapy was given one hour before the gentamicin was induced and took place for 8 days. The levels of creatinine and urea were measured on the first up to the tenth day.

Results: Various creatinine and urea levels were statistically analyzed by employing One Way Anova and *pos hoc* LSD. Statistically, different creatinine and urea levels results showed that ethanol extract of *S. polyanthum* leaves with a 125 mg/kg BW dose was significantly different ($p<0.05$) from 250 and 500 mg/kg BW.

Conclusion: An ethanol extract of *Syzygium polyanthum* leaves with a 125 mg/kg BW was the most effective dose serving as a nephroprotective agent in gentamicin-induced rats.

Keywords: gentamicin; nephroprotective; *Syzygium polyanthum*.

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MICPS1-015-PP: PRELIMINARY STUDY ON THE ANTIBACTERIAL ACTIVITIES OF A 96% ETHANOL EXTRACT OF *PADINA AUSTRALIS* AGAINST *ESCHERICHIA COLI* ATCC 25922

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***Context*:** *Padina australis* is a type of brown algae found in Indonesian coastal waters in vast amounts. *Padina australis* is usually employed as an antibacterial agent, anti-tumor agent, fungicide, and herbicide in the pharmaceutical industry. This utilization is closely related to the presence of primary and secondary metabolites in *Padina australis*.

Aim: This preliminary study observed whether a 96% ethanol extract of *P. australis* has antibacterial activities against *Escherichia coli* ATCC 25922. Hence, the antibacterial activity was determined by employing a well diffusion method. Moreover, based on the results of the phytochemical screening of a 96% ethanol extract of *P. australis*, it was found out that there were secondary metabolites such as alkaloids, flavonoids, terpenoids, steroids, tannins, saponins, and polyphenols in that extract.

Results: Based on the results of the antibacterial activity test for a 96% ethanol extract of *P. australis* with 5% and 15% concentrations, it was found out that there were anti-bacterial activities against *Escherichia coli* ATCC with a strong category. Furthermore, to investigate the antibacterial activity of a 96% ethanol extract of *P. australis* more elaborately, we recommend further studies raising the test concentrations.

Keywords: antibacterial activity; *Padina australis*; *Escherichia coli*; well diffusion method.

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MICPS1-016-PP: ANTIOXIDANT EFFECTS OF A PURSLANE (*PORTULACA OLERACEAE* L.) EXTRACT POTENTIALLY USED AS A STANDARDIZED HERBAL ANTI-OBESITY DRUG

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Context: Purslane (*Portulaca oleracea* L.) is a plant in the family *Portulacacea* known to contain some active compounds serving as an antioxidant agent such as flavonoids and polyphenols, saponins and carotenoids. Antioxidants play an important role in fighting against oxidative stress in the human body. Obesity is a disease capable of triggering oxidative stress. Obesity will trigger some inflammatory processes and metabolic disorders that will result in an increased level of oxidative stress.

Aim: To determine the antioxidant activities of an ethanol extract of *P. oleracea* that could be used as an anti-obesity drug. The active compounds of *P. oleracea* were obtained by employing a maceration method using ethanol for 3 days. The *P. oleracea* plants were collected in the city of Makassar. The antioxidant activities were determined by employing a DPPH radical reduction method.

Results: It was found out that an ethanol extract of *P. oleracea* had some antioxidant activities, with the value of its IC_{50} amounting to 306.29 mg/L.

Conclusion: An ethanol extract of *Portulaca oleracea* L. did some activities as an antioxidant agent potentially used as a standardized herbal anti-obesity drug.

Keywords: antioxidant; obesity*; Portulaca oleracea*.

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MICPS1-017-PP: EXTRACTION AND PHYTOCHEMICAL SCREENING TESTS OF BLACK GARLIC

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Context: Indonesia is a country with diverse kinds of plants. One of the most widely used plants is garlic (*Allium sativum* Linn). Garlic has antioxidant effects and pharmacological effects such as antibiotic effects, antiprotozoal and antitrichomonal effects, effects on the cardiovascular system, and prevention of blood clots. Moreover, it can also provide anti-inflammatory, anti-tumor, hypoglycemic, and lipid-reducing effects. However, a strong and tangy garlic flavor poses a big problem for anyone who wishes to develop any products using garlic compounds. Therefore, various processing methods have been employed to eliminate the smell and taste of garlic, one of which is the heating process (aging). The aging process causes garlic characteristics to change. For instance, the color of garlic becomes black, the taste of the garlic becomes sweet, and its odor is no longer pungent. Moreover, the aging process results in more bioactive compounds such as S-allyl cysteine (SAC), amino acids, flavonoids, polyphenols, and antioxidant activities than fresh garlic.

Aim: Screening the phytochemical component of garlic that is processed at 70°C on different days.

Method: The aging process was carried out at a 70°C temperature with 3 heating-period variations, namely 7 days, 14 days, and 21 days. Afterward, the extraction process was carried out by employing a 70% ethanol solvent and phytochemical screening.

Results: It was found that the 3 heating-period variations produced different characteristics of black garlic; however, results of the phytochemical screening did not show any differences.

Conclusion: The phytochemical results that an extract of black garlic with 3 heating-period variations contained flavonoids, alkaloids and tannins; however, it did not contain saponins.

***Keywords*:** black garlic; garlic; phytochemical.

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MICPS1-018-PCL: TERATOGENIC EFFECTS OF AN ETHANOL EXTRACT OF RAMBUTAN LEAVES (*NEPHELIUM LAPPACEUM* L.) ON THE WHITE MICE

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***Aim*:** To determine the teratogenic effects of an ethanol extract of rambutan leaves on the female white mice.

***Methods*:** The study subjects were twenty mice (weighing 20–30 g) divided into four groups (5 mice for each group). They were labeled as control, and each of the groups was treated with an extract of rambutan leaves with various doses ranging from 25, 50, to 100 mg/kg, respectively. The mice's body weights were measured during the treatment. One male mouse and one female mouse were confined in the cage in the afternoons, and on the next morning, the vaginal plug was measured to observe whether the mice couple had copulated. Moreover, the day of detection of the vaginal plug was designated as day zero of pregnancy. On the sixth day of the pregnancy, all of the mice in all groups were given the treatment once in a day for ten days. On the eighteenth day, the mice were sacrificed, and a laparotomy procedure was conducted to remove the fetuses and to examine any signs of their abnormalities.

***Results*:** It was found out that doses played a significant role in affecting the mice's body weight ($p<0.05$). The mice treated with a 100 mg/kg dose had the lightest body weight. Moreover, the fetus and fetal weights did not play any significant role ($p>0.05$). Hemorrhage was found in all of the mice groups. In the groups where the doses were 50 and 100 mg/kg, respectively, some fetuses grew slowly, and some other fetuses were dead.

***Conclusion*:** Abnormalities found in the fetuses indicated that an ethanol extract of rambutan leaves potentially had teratogenic effects.

***Keywords*:** abnormalities; copulation; fetuses.

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MICPS1-019-PCL: EFFECTS OF AN EXTRACT OF AMETHYST SEEDS IN NANOCHITOSAN GELS ON THE NUMBER OF FIBROBLASTS USED IN THE GINGIVAL WOUND HEALING

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***Context*:** Wound healing is the body's complex response to restore tissue's integrity and function. Amethyst' seeds (*Datura metel*) contain an alkaloid that can increase the proliferation and migration of fibroblasts, thereby accelerating wound healing. The bioavailability of drugs can be improved by using nanotechnology with mucoadhesive chitosan polymers and conducting a gel preparation.

***Aims*:** To determine the effects of an extract of Amethyst seeds in the nanochitosan gels on the number of fibroblasts used in gingival wound healing.

Methods: Subjects of this study were 36 *Rattus norvegicus* (brown rats) injured in their mandibula's labial gingiva with a 2-mm punch biopsy. The subjects were divided into 4 groups: base gel, Aloclair™ gel, chitosan gel of an amethyst seed extract, and nano chitosan gel of an amethyst seed extract. The gels were applied 2 times a day (in the mornings and evenings). Three rats from each group were sacrificed on the 3rd, 5th, and 7th days; Moreover, they were then stained with hematoxylin and eosin. The fibroblasts were counted by employing a 40-x-objective-lens magnification microscope. The obtained data were analyzed by employing a two-way ANOVA test with a 95% confidence level.

***Results*:** It was found out that a nanochitosan gel of an amethyst seed extract differed ($p<0.05$) significantly from a chitosan gel of an amethyst seed extract and a control negative (base gel).

***Conclusion*:** A nanochitosan gel of an amethyst seed extract affected the increased number of fibroblasts on the gingival wound healing.

Keywords: alkaloid; *Datura metel*; nanoparticles; proliferative phase; topical gel.

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MICPS1-020-PM: THE ETHNOPHARMACY AT MONGONDOW TRIBE NORTH SULAWESI

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Context: Skin diseases, including acne, can be caused by a microbial imbalance (dysbiosis). The specific microbes that cause acne are *Staphylococcus aureus, Propionibacterium acnes, and Staphylococcus epidermidis*. Not only does fermented garlic (*Allium sativum* L.) have more antimicrobial potentials than that of fresh garlic, but it also inhibits a decreased collagen deposition on the skin. These potentials can serve as alternative antibiotics and chemicals used to treat acne and maintain healthy skin.

Aim: To determine the antibacterial activity of fermented *A. sativum* extract against pathogenic bacteria that cause acne.

Method: *A. sativum* was fermented in 3 time-period variations (7, 14, and 21 days); then, it was macerated with 70% alcohol solution. Finally, its antimicrobial activities against *Staphylococcus aureus, Propionibacterium acnes*, and *Staphylococcus epidermidis* with positive control of clindamycin were measured.

Result: An extract of fermented *A. sativum* provided such inhibitory activities against *Staphylococcus epidermidis* and *Propionibacterium acnes* with the greatest inhibition results when it was fermented for 21 days.

Keywords: antimicrobe; fermentation; garlic.

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MICPS1-021-PP: TOTAL PHENOLIC AND FLAVONOID COMPOUND OF CRUDE AND PURIFIED EXTRACT OF GREEN TEA LEAVES [*CAMELLIA SINENSIS* (L.) KUNTZE]

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Context: Polyphenols are a class of chemical compounds most commonly found in plants. These compounds have many health benefits associated with their character. The antioxidant activity of natural materials is related to the polyphenol content, which can counteract free radicals.

Aim: To determine the total phenolic and flavonoid levels in crude and purified extracts of the green tea leaves [*Camellia sinensis* (L.) Kuntze].

Method: The total phenolic content was determined by the Folin-Ciocalteau method using gallic acid as a standard reference. Total flavonoid content was determined by the aluminum chloride method using quercetin as a standard reference. A UV-Visible spectrophotometer was used to measure the absorbance of the reaction.

Results: The level of total phenolic in the crude and purified extract of green tea leaves was 40.50 and 43.90 mg GAE/g, respectively. The total flavonoid levels in the crude and purified extract of green tea leaves were 2.77 and 3.14 mgQE/g, respectively.

Conclusion: The green tea leaves have higher total phenolic content than flavonoid content. The total phenolic and flavonoid content was higher in the purified extract than in the crude extract.

Keywords: gallic acid; green tea; quercetin; total phenolic; total flavonoid.

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MICPS1-022-PP: ANTIOXIDANT AND ANTI-HYPERLIPIDEMIC PROPERTIES OF *FUCUS VESICULOSUS* L. SERVING TO TREAT DIET-INDUCED, OBESITY OF SPRAUGE DAWLEY RATS

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Context: *Fucus vesiculosus* L., best known as bladderwrack, is often used in alternative medicine and homeopathy to treat obesity. The antioxidants activities in those plants have been suggested as one of the working mechanisms treatments against obesity. Hence, the antioxidant properties of *Fucus vesiculosus* were examined and established in this study.

Aim: To explore the antioxidant and antihyperlipidemic potentials of a methanol extract of *Fucus vesiculosus* in a high-fat diet (HFD)-fed Sprague Dawley rats.

***Methodology*:** The antioxidant potentials of an extract of *Fucus vesiculosus* with various extractants and concentration levels were determined by employing total phenolic content (TPC) and DPPH radical-scavenging activity. In the previous study, the rats were divided into 6 groups, each consisting of 6 rats. 25 g of high-fat diet was induced to the rats in those 5 groups. Then, they were acclimatized for a week before the experiment. Plant-based and pharmacological treatments include *Fucus vesiculosus* extract (250 and 500 mg/kg BW), *F. vesiculosus* mother tincture, and phentermine were then given for 5 weeks to each of the groups. Several parameters such as food intake, body weight, BMI, relative organ weight, and average adipose fats weight were measured throughout the study. All samples from the previous study were subjected to the biochemical evaluations, liver histopathological, and antioxidant study in the following study.

Results: Results of the current study indicated a good correlation between the TPC and DPPH radical scavenging activity against the increased concentrations. Moreover, they also showed us that phenolic compounds are powerful scavengers of free radicals. In essence, a 70% methanolic extract exhibited a better total phenolic content and better antioxidant properties than an aqueous extract and a 70% ethanolic extract ($p<0.05$). The methanolic extract of *F. vesiculosus* showed a great anti-hyperlipidemic effect since it significantly reduced the lipid parameters of total cholesterol, low-density lipoprotein-c, and atherogenic index. Moreover, it subsequently increased the high density of lipoprotein-c in the groups of rats receiving the *F. vesiculosus* treatment, although it was statistically insignificant. However, there were no significant differences observed in the triglyceride level. The histopathological examination revealed that animals treated with a *Fucus* extract did not show any aggravated histological changes; moreover, seaweed was able to prevent and reverse the obesity metabolic syndrome progression to non-alcoholic steatohepatitis (NASH) in the case of the high-fat diet group ($p<0.05$).

Conclusion: An extract of *Fucus vesiculosus* methanolic with a 250 mg/kg dose was the best extract exhibiting a weight reduction effect with no severe biochemical and histopathological changes in all of the lab animals. Therefore, the study results supported a hypothesis stating that *Fucus vesiculosus* supplementation successfully lowered an elevated serum lipid and could potentially prevent obesity.

***Keywords*:** anti-hyperlipidemia; antioxidant; extract; *Fucus vesiculosus*; high-fat diet.

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MICPS1-023-PP: FORMULATING AND EVALUATING A CREAM CONTAINING AN EXTRACT OF *ZINGIBER OFFICINALE* ROSCOE

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Context: **G**inger (*Zingiber officinale* Roscoe) is a well-known herb and spice commonly used for culinary and medical purposes. Rhizome of *Z. officinale* is widely used for colds, emesis or nausea. Antioxidant, antimicrobial, anti-inflammatory, and anticancer are examples of biological activities found in an extract of *Z. officinale*. Therefore, not only can *Z. officinale* potentially be commercialized in Malaysia, but it is also inexpensive and easily accessible.

***Aim*:** Formulating an antioxidant cream containing various concentrations of an extract of *Z. officinale* and evaluating the stability and antioxidant properties of the formulated cream.

Method: A blank cream was prepared. Then, various concentrations (0.5, 1, 2, 4, and 6%) of *Z. officinale* extracts were incorporated into the cream. They were labeled as F1, F2, F3, F4 and F5, respectively. Next, all creams were evaluated for their organoleptic properties, pH, spreadability, dye test, accelerated stability, and microbial limit. Moreover, the total phenolic content and DPPH radical scavenging activities were also measured for their antioxidant properties.

Result: All of the *Z. officinale* creams, including the blank cream, appeared homogenous with no phase separation. Their pHs ranged from 4.2 to 8.0. All of the creams appeared to have good spreadability. Moreover, they appeared to be in an oil-in-water (O/W) form, and any microbial growths were not found there. In the accelerated stability tests, all creams did not show any color changes, and they were homogenous with no phase separations at 28°C and 40°C for 30 days. Furthermore, their pHs were still within the range. The results of TPC and DPPH test showed us that F1 had the highest total phenolic content (3.5633 ± 0.00 mg/g GAE) and the highest DPPH activity (69.4800 ± 1.44 %), while F5 showed the lowest TPC (0.3380 ± 0.02 mg/g GAE) and the lowest DPPH activity (37.69.33 ± 2.87%).

Conclusion: The formulated cream containing *Z. officinale* extract appears to be stable; further studies should be conducted to explore its potential as an antioxidant or cosmetic cream that could be commercialized in the future.

Keywords: antioxidant; formulated cream; ginger; *Zingiber officinale*.

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MICPS1-024-P: ANTIOXIDANT AND ANTIMICROBIAL PROPERTIES OF METHANOLIC EXTRACTS OF *ANNONA MURICATA* L. LEAVES AND PULP

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***Context*:** *Annona muricata* L. is a medicinal plant species of the genus *Annona* of the *Annonaceae* family. It is native to the tropical regions of the Americas, but it is now found in many tropical countries such as Malaysia. By taking advantage of technological and scientific advances, various researchers have conducted studies on *A. muricata* to determine its benefits in the healthcare industry. Some phytochemicals found in *A. muricata* are acetogenins, coumarins, phenolic, alkaloids and flavonoids. Those phytochemicals provide various health benefits such as antioxidant, anti-microbial, anti-diabetic benefits, among others.

***Aim*:** Identify the phytochemicals found in the extracts of *A. muricata* leaves and their pulp, especially phenolics and flavonoids. Moreover, the study aimed to evaluate and compare the antioxidant and anti-microbial activities of those two parts of the plant.

***Method*:** The pulp and leave extracts were obtained from the state of Negeri Sembilan. The antioxidant tests included FRAP, DPPH, and TPC. Moreover, the antimicrobial test was conducted towards *S. aureus* by employing a disc diffusion method**.** There were several concentration levels of the samples, namely 25, 50, 100, 200, and 400 µg/mL.

***Results*:** Both extracts of the leaves and pulp contained a good antioxidant level at 25, 50, 100, 200 and 400 µg/mL concentrations. However, there were no significant antimicrobial activities for both of those extracts. When compared, the extract of the leaves had a higher antioxidant level and higher sensitivity towards microorganisms than the pulp extract.

***Conclusion*:** *Annona muricata* contains phytochemicals such as phenols, flavonoids and saponins. Moreover, its pharmacological aspects, such as antioxidant, anticancer, and antimicrobial, are well established. Therefore, we recommend further studies on the pharmaceutical areas of *Annona muricata* by taking advantage of any technological advances to incorporate *Annona muricata* into some new pharmaceutical products such as health supplements and cosmetics.

***Keywords**: Annona muricata;* antioxidant tests; DPPH; FRAP; TPC.

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MICPS1-025-PP: STUDY ON THE ANTIOXIDANT POTENTIALS AND CHARACTERIZATIONS OF POLYSACCHARIDES OF *PLEUROTUS FLORIDA* IN A SUBMERGED CULTURE FERMENTATION

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Context: Despite their various roles in physiological conditions, reactive oxygen species (ROS) affects the human body in that it can lead to a diverse range of diseases when an overproduction and a reducing endogenous antioxidant activity occurs. Thus, exogenous antioxidants obtained from some natural products such as edible mushrooms have gained popularity since they can help combat ROS. Edible mushrooms contain many bioactive compounds exhibiting antioxidant properties such as β-glucans and phenolic compounds.

Aim: To characterize and determine the antioxidant potentials of both exopolysaccharide (EPS) and endopolysaccharide (IPS) of *P. florida* since there have only been limited studies on white oyster mushroom (*Pleurotus florida*) if compared to that of other *Pleurotus sp*.

Method: Submerged culture fermentation (SCF) in an airlift bioreactor is an innovative way to produce fungal polysaccharides since it can produce a high yield of mycelial biomass and polysaccharides. β-glucan was determined to quantify the total β-glucan content in each extract, while FTIR was employed to analyze the presence of any functional groups in the extract. TPC was conducted to quantify the phenolic compounds contained in each extract, and a DPPH assay was carried out to determine the ability of the extract to scavenge the free radicals. Moreover, an FRAP assay was carried out to determine the reducing ability of a polysaccharides extract.

Results: The yields of the EPS and IPS were 13.14 g/L and 14.39%, respectively, so they were of good values. FTIR showed results that indicate the presence of phenolic compounds and β-glucans in both polysaccharide structures of the *P. florida* extract. Taking into account the content of β-glucan, we found out that EPS contained higher β-glucan (40.25 g/100g) than did IPS (6.22 g/100g). Moreover, TPC of IPS ranged from 0.02 mg GAE/g DE to 0.06 mg GAE/g DE, so the range was higher than that of EPS ranging from 0.013 mg GAE/g DE to 0.024 mg GAE/g DE. Moreover, phenolic compounds, playing such a crucial role in the antioxidant activities of the extracts, were found. Based on the DPPH assay, the results depended on the concentration, and IPS had better antioxidant activity than EPS since the IC_{50} values were 6.47 and 10.35 mg/mL, respectively. Based on the FRAP assay, the results also depended on the concentration, with the IPS and EPS IC_{50} values amounting to 462.69 and 511.82 mg/mL, respectively. A lower IC_{50} value meant that the sample had a higher antioxidant activity. However, the results of FRAP were relatively lower than that of other findings.

Conclusion: TPC played a crucial role in exhibiting the antioxidant activity of the polysaccharides. Moreover, both of them appeared to have a good scavenging ability but a poor reducing ability.

Keywords**:** antioxidant; FTIR; *Pleurotus florida*; TPC.

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MICPS1-026-PP: EVALUATING THE ANTIOXIDANT AND ANTIMICROBIAL PROPERTIES OF *EXO* AND *ENDO* EXTRACTS OF *PLEUROTUS FLORIDA* (WHITE OYSTER MUSHROOM)

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Context: *Pleurotus* (oyster mushroom) species has been utilized by human cultures worldwide due to its dietary benefits, medicinal properties, and other beneficial impacts. They contain various biologically active compounds with therapeutic actions. They modulate the immune system, inhibit tumor growth and inflammation, have hypoglycemic and antithrombotic actions, lower blood lipid concentrations, prevent hypertension and atherosclerosis, and have antimicrobial and other actions. White oyster mushroom *(Pleurotus florida)* is an edible mushroom gaining its popularity due to its nutritional values, low production cost, and easy cultivation.

Aim: To evaluate the antioxidant and antimicrobial properties of *P. florida* endopolysaccharide (IPS) and exopolysaccharide (EPS) extracts to be used as a new, cheap source of natural antioxidants and antimicrobials.

Methodology: Antioxidant and antimicrobial activities of different concentrations of *P. florida* extracts were evaluated using the Folin-Ciocalteu method to measure the total content of phenolics and DPPH radical scavenging activities. Moreover, the ferric reducing antioxidant power tests were used to determine the antioxidant properties, and an agar disk-diffusion method was used to determine the antimicrobial properties.

Results: Of the 5 concentrations tested to determine antioxidant properties of both extracts, the concentration of the IPS extract of 1 mg/mL, showed the highest content of total phenolics and the highest ferric reducing antioxidant power. Meanwhile, the EPS extract 0.2 mg/mL showed the lowest total phenolics content and the lowest ferric reducing antioxidant power. Moreover, in the case of the DPPH radical scavenging activity, the IPS extract 0.2 mg/mL showed the highest scavenging activity, and 1 mg/mL showed the lowest. When the antimicrobial activities were evaluated, all 5 concentrations showed no antimicrobial activities against *S.aureus, P. aeruginosa* and *E.coli.*

Conclusion: *Pleurotus florida* mushroom should be incorporated in various medicines to be used in the treatment of various diseases. Moreover, it should be incorporated into everyone's diet since it is suitable for health.

Keywords: DPPH; Folin-Ciocalteu; *Pleurotus florida*.

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MICPS1-027-PM: ANTIBACTERIAL ACTIVITIES OF AN ETHANOL EXTRACT OF THE BUGINESE GINSENG [*TALINUM PANICULATUM* (GAERTN)] LEAVES AGAINST *BACILLUS SUBTILIS* AND *SALMONELLA TYPHI* BACTERIA

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Context: Buginese ginseng [*Talinum paniculatum* (Geartn)] leaves contain many chemical compounds some of which are flavonoids potentially used as an antibacterial agent.

Aim: To determine the antibacterial activities of an ethanol extract of the *T. paniculatum* leaves against *Bacillus subtilis* and *Salmonella thypi* bacteria.

Method: The antibacterial activities were determined by employing a diffusion agar method with 3 concentrations. They were 25, 50, and 75%, respectively.

Results: An ethanol extract of the *T. paniculatum* leaves with 25, 50, and 75% concentrations had some antibacterial activities against *Bacillus subtilis* with 17.69, 20, and 22 mm inhibition zone diameters, respectively. Moreover, the extract also had some antibacterial activities against *Salmonella typhi* with 19.20, 20.1, and 22 mm inhibition zone diameters, respectively.

Conclusion: *Talinum paniculatum* (Geartn) leaves had antibacterial activities and had several inhibition zone diameters against *Salmonella typhi*, higher than *Bacillus subtilis*. Moreover, the higher the concentration of an extract was, the higher the inhibition zone diameter against the bacteria would be.

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MICPS1-028-P: FORMULATION AND ACTIVITY TEST OF EMULGEL MUCUS OF A SNAKEHEAD FISH (*CHANNA STRIATA*) USED TO HEAL DIABETES MELLITUS WOUND

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Context: Snakehead fish (*Channa striata*) has a high content of proteins such as albumins, playing a crucial role in the health of a new network, healing various kinds of wounds, and maintaining the fluid balance in the cells. Together with meat, substances mucus snakehead fish can serve as an antibacterial agent.

Aim: Formulating and testing the activities of the emulgel mucus *C. striata* used to heal a wound caused by diabetes mellitus. The emulgel was made by using several concentrations such as 5, 10, and 15%.

Methods: In this study, an experimental laboratory method was employed by using 15 lab animals. Those 15 animals were divided into five groups. It meant that one group consisted of three lab rats. The activity tests were done by using *Staphylococcus aureus* bacteria. Moreover, the organoleptic test, the pH test, the moisture test, the test of homogeneity, the test of sensitivity was also conducted. Then, the obtained data were analyzed by using SPSS with a One-Way ANOVA method.

Results: The mucus of *C. striata* can be formulated in the form of emulgel with a very qualified formulation test; moreover, based on the data analysis, the results of each of the groups were not significantly different, and a 15% concentration of the 10 mm long and 25 mm fish showed the most potent activities against *Staphylococcus aureus* bacteria.

Conclusion: The mucus of *Channa striata* can be formulated in the form of emulgel and has antibacterial properties used to heal diabetes mellitus wounds.

Keywords**:** albumin; diabetes mellitus; emulgel; mucus; snakehead fish; wound.

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MICPS1-029-PCL: STUDY ON THE USE OF ANTITHYROID DRUGS (PROPYLTHIOURACIL AND METHIMAZOLE) FOR THE HYPERTHYROID PATIENTS AT RSPAL DR. RAMELAN, SURABAYA: A RETROSPECTIVE STUDY

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Context: Both the production and secretion of thyroid hormones increase in the case of hyperthyroidism. This condition results in an increased thyroxine (T4) and triiodothyronine (T3) levels in the blood. Moreover, it also results in a reduced level of the thyroid-stimulating hormone (TSH). Antithyroid drugs such as methimazole and propylthiouracil are most often used to treat hyperthyroidism.

Aim: Elaborating the use of methimazole or propylthiouracil for hyperthyroid patients.

Method: This study was an observational and retrospective study with a descriptive analysis research design conducted from January 2014-December 2017 at RSPAL Dr. Ramelan, Surabaya.

Results: Hyperthyroidism was frequently found more in women (80%) than in males (20%), and most of the patients' ages ranged from 40 years to 60 years (84%). The patients' most prevalent clinical symptoms included shaking (10%) and palpitations (5%). When both methimazole and propylthiouracil were used as a combined treatment with propranolol, the results showed a 100% symptomatic improvement. Four patients (14.8%) were still hyperthyroid, two patients (7.4%) were hypothyroid, and 21 patients (77.8%) were euthyroid as a result of that methimazole therapy. Meanwhile, four patients (16%) were still hyperthyroid, 3 patients (12%) were subclinical hyperthyroid, and 18 patients (72%) were euthyroid as a result of that propylthiouracil therapy.

Keywords: hyperthyroidism; methimazole; propranolol; propylthiouracil; retrospective study.

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MICPS1-030-PCL: ANTIOXIDANT EFFECTS OF VIRGIN COCONUT OIL ON THE BODY: A SYSTEMATIC REVIEW

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Context: Virgin coconut oil (VCO) is commonly used as a commodity in Indonesia. It is derived from *Cocos nucifera* L. This plant grows all over Indonesia, such as in South Sulawesi especially. However, not many people know the systemic effects of VCO on health.

Methods: This study evaluated 13 articles obtained from 502 identified articles found in 3 databases, namely Portal Garuda, PubMed, and Research Gate. The analysis was carried out based on the provisions of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) by considering the inclusion and exclusion criteria in the selected articles pursuant to using the keywords used.

Results: VCO contained some antioxidant agents such as lauric acids and free fatty acid serving to prevent oxidative stress and serving as an antioxidant agent; therefore, VCO had some protective effects on several organs such as liver, kidneys, neurons, and hormones and could prevent an infection.

Conclusion: VCO had some antioxidant effects good for the health of adult and elderly patients.

Keywords: antioxidant; free fatty acid; lauric acid; oxidative stress; virgin coconut oil.

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MICPS1-031-PCH: POTENTIALS OF A FRACTIONATED N-HEXANE, ACETONE AND ETHANOL EXTRACT OF PALMYRA FRUITS (*BORASSUS FLABELLIFER* L.) TO SERVE AS AN ANTIOXIDANT

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Context: Fractionating an n-hexane, acetone, and ethanol extract in palmyra fruit (*Borassus flabellifer* L.) as an antioxidant is generally aimed at testing antioxidant activities in a fractionated extract of a *B. flabellifer* fruit by employing diphenyl-picrylhydrazyl (DPPH).

Aim: To determine the value of IC_{50} antioxidant activity of a fractionated fruit extract *B. flabellifer* by employing a DPPH method.

Method: The antioxidant activities were examined by employing a DPPH method. Moreover, the antioxidants were determined by making DPPH solution first, then making a stock solution of each of the n-hexane, acetone, and ethanol extracts from a purified *B. flabellifer* by dividing the five concentrations in a dilution matter to obtain a maximum result.

Results: It was found out that the higher the concentration, such as 1, 2, 4, or 8 ppm, the higher the IC_{50}, namely 2.97 µg/mL (very strong category), was obtained. Furthermore, in terms of antioxidant activities in each extract, the values of the n-hexane, ethanol, and acetone extracts of the *B. flabellifer* were 7.789 µg/mL, 23.961 µg/mL, and 9.857 µg/mL, respectively.

Conclusion: We concluded that *Borassus flabellifer* fruits could serve as an antioxidant.

Keywords: antioxidant; *Borassus flabellifer;* DPPH; palmyra fruit.

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MICPS1-032-PM: ANTIBACTERIAL ACTIVITIES OF THE ROOTS, BARKS AND LEAVES OF AN N-HEXANE EXTRACT OF *CYMBOPOGON NARDUS* (L.) RENDLE AGAINST *STAPHYLOCOCCUS AUREUS* AND *ESCHERICHIA COLI*

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***Aim*:** Measuring the inhibitory ability of microorganisms of n-hexane extracts of the roots, barks, and leaves of *Cymbopogon nardus* (L.) Rendle.

***Method*:** The inhibitory activities against *Escherichia coli* and *Staphylococcus aureus* were measured by employing a disc diffusion method with a 10% concentration.

***Result*:** The extract of the *C. nardus* root had the highest average activity, with the inhibition zone value amounting to 8.70 mm on *Staphylococcus aureus* and 8.45 on *Escherichia coli*. Meanwhile, the bark extract had the lowest average activity with the inhibition zone value of 7.05 mm on *Staphylococcus aure*us and 6.47 on *Escherichia coli*. Moreover, the extract of the leaf had no activities.

***Conclusion*:** It was recommended that an extract of *Cymbopogon nardus* (L.) Rendle root is used as an antibacterial agent against 2 types of bacteria responsible for various skin and digestive diseases.

***Keywords*:** antibacterial activity; discs diffusion method; n-hexan extract; inhibition zone diameter.

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MICPS1-033-P: FORMULATING AND EVALUATIING ANTI-DANDRUFF SHAMPOO MADE OF NATURAL, PHARMACEUTICALLY STABLE VIRGIN COCONUT OIL

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Context: Virgin coconut oil (VCO) can serve as an antifungal agent, formulated into anti-dandruff shampoo emulgel that fights against dandruff such as *Pityrosporum ovale*.

Aim: Making shampoo emulgel formula made of natural VCO.

Method: The shampoo was formulated in an emulgel system with various emulgators and gel bases such as F1 (SLS with HPMC), F2 (SLS with carbopol), F3 (stearic acid: tea with HPMC), and F4 (tween 80: span 80 with HMPC). Then, those various formulations were evaluated pharmaceutically.

Results: The separation at F1, F3, and F4 occurred, while it did not occur at F2. Then, F2 was evaluated physically for the sake of its stress conditions. Based on the evaluation results, it was found out that its organoleptic properties and homogeneity did not change in terms of color, odor and texture. The type of the formed emulsion was m/a. The formed foam size of the shampoo ranged from 2.9 cm to 4.3 cm. Moreover, the foam was stable for more than 15 minutes. In a dirt dispersion test, the prepared shampoo was able to clean as the ink was dispersed into water. Before the stress condition, the average pH was 4.94 ± 0.03, and the viscosity was 32.8 ± 4.80 P. Furthermore, after the stress condition, the average pH was 4.91 ± 0.04, and the viscosity was 25.92 ± 3.97 P. Based on the results of the data analyzed by employing an ANOVA, it was found out that the pH and the viscosity of the prepared shampoo were not significant.

Conclusion: VCO could be formulated into pharmaceutically stable shampoo by employing a carbopol gel-based sodium lauryl sulfate emulgator.

Keywords: anti-dandruff; emulgel; shampoo; virgin coconut oil.

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MICPS1-034-PCH: MOLECULAR MODELLING STUDY OF AMINOALKYLNAPHTHOL DERIVATIVES AS POTENTIAL DEHYDROSQUALENE SYNTHASE INHIBITOR

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***Context*:** An elevated incidence of community-acquired (CA) and hospital-acquired (HA) methicillin resistance to *Staphylococcus aureus* (MRSA) leads to increased cases of invasive infection. There are no new classes of antibacterial agents able to invade the nonresistant mechanism of this pathogen on the horizon. Thus, the knowledge of antibacterial properties seems to serve as the best approach to decide the optimal therapeutic option for the infections due to the multi-drug resistant pathogens. The huge cost of the drug discovery process has led to the utilization of a computational method called molecular modeling and drug design. In this study, aminoalkylnaphthols derivatives were investigated where dehydrosqualene synthase was chosen in the target.

***Aim*:** Performing a molecular docking simulation of the aminoalkylnapthols compound against the dehydrosqualene synthase of *Staphylococcus aureus*.

***Method*:** The study was conducted by employing a molecular docking simulation method. AutoDock suite was used for molecular docking. Moreover, the results were analyzed by employing a Discovery Studio Visualizer.

***Results*:** The best-docked ligand for a dehydrosqualene synthase was AAN40. The protein-ligand complexes showed a similarity in terms of the interaction between the binding site residues and the ligands. Therefore, it was found out that the complexes showed a good binding interaction between the ligand and the protein binding site. The molecular properties were evaluated by employing Lipinski's Rule of Five. Eventually, it was concluded that the newly designed 9 ligands such as AAN40, AAN37, AAN36, AAN39, AAN33, AAN38, AAN35, AAN34, and AAN4 posed an acceptable drug-likeliness behavior favorable for the membrane permeability with a desired drug-receptor interaction. As a result, a few ligands passed the rules of leading to a good oral bioavailability profile.

***Conclusion*:** The top ligands for the proteins showed a higher affinity towards the binding site and the good inhibition constant (Ki).

Keywords: aminoalkylnaphthols; dehydrosqualene; docking; MRSA.

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MICPS1-035-HS: THE FACTORS THAT INFLUENCE E-CIGARETTE USERS TO QUIT: A SYSTEMATIC REVIEW

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Context: E-cigarette use is increasing worldwide. Some people began using e-cigarettes to quit smoking and believed that they were less dangerous than smoking conventional cigarettes. However, there is no long-term safety data on e-cigarettes, and they are not without risk. Some e-cigarette users have stopped using e-cigarettes due to many reasons. A few studies have been published in recent years that investigated the reasons why e-cigarette users quit.

Aim: To systematically review the reasons for discontinuing e-cigarettes among e-cigarette users.

Method: The search was done using four electronic databases; PubMed, Ovid Online, Web of Science, and Science Direct. This review included all English-language, quantitative, and qualitative publications that explored reasons for e-cigarette discontinuation among e-cigarette users. The results were then categorized based on the most frequently reported reasons and categorized into several main themes. The publications were chosen from 2012 to December 2020.

Results: The references were identified through literature searches, and only 15 relevant references were included, reviewed, and appraised. According to the AXIS tool, the quantitative studies in this review were found to range from moderate to strong, while the CASP Checklist for qualitative studies suggested that some of the studies did not sufficiently reflect the researcher-interviewer interaction. According to the themes, the most often cited reasons for quitting e-cigarettes were nicotine dissatisfaction with e-cigarette devices, health and safety concerns, and simply experimenting with e-cigarettes.

Conclusion: As this literature is recent and continuously changing, further studies should establish clear evidence for e-cigarette cessation.

Keywords: e-cigarette cessation; e-cigarette discontinuation; quit e-cigarettes; stop e-cigarettes; vaping cessation.

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MICPS1-036-P: A SYSTEMATIC LITERATURE REVIEW OF HEMICELLULOSE-BASED HYDROGELS FOR A DRUG DELIVERY SYSTEM

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***Context*:** The development of a hemicellulose-based hydrogel has gained many researchers' interest for the past few years due to its excellent economical and non-toxic biocompatibility and biodegradability. A hemicellulose-based hydrogel possesses some exclusive properties such as tunable swelling behavior and stimuli-responsiveness, so those properties give some advantages when that potential hydrogel is prepared to be applied in drug delivery.

***Method**:* This study was conducted by employing a systematic review process guided by a PRISMA protocol involving 20 related studies retrieved from Science Direct and PubMed. Moreover, the data were extracted and analyzed by thoroughly reviewing all of the included articles. Three themes were mainly focused on the hydrogel synthesis, properties, and drug delivery applications were raised and discussed.

Results: A hemicellulose-based hydrogel had great performance, functionality and had proven to be a promising drug carrier for controlled and sustained-release drug delivery.

Keywords: drug delivery; hemicellulose; hydrogel.

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MICPS1-037-PP: TOTAL FLAVONOID CONTENTS AND UV-VIS FREE RADICAL CAPTURE ACTIVITY TEST USING 1.1-DIPHENYL-2- PICRYLHYDRAZYL OF A PURIFIED ETHANOL EXTRACT OF THE GOD'S CROWN PEEL [*PHALERIA MACROCARPA* (SCHEFF.) BOERL.]

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Context: God's crown [*Phaleria macrocarpa* (Scheff.) Boerl.] is one of the traditional plants indigenous to Papua. God's crown is an herbaceous plant in the family *Thymelaceae* capable of serving as an antibacterial, anti-inflammatory, antioxidant and cytotoxic agent. God's Crown fruit used in this study was those obtained from the regency of East Luwu, South Sulawesi. The skin of a *P. macrocarpa* fruit contains several compounds such as alkaloids, saponins, and flavonoids. Most flavonoids have some antioxidant activities due to the presence of the phenolic hydroxy groups in their molecular structure. In addition, the flavonoids present in the pericarp of a *P. macrocarpa* fruit are kaempferol, myricetin, naringin, and rutin. The efficacy of a *P. macrocarpa* fruit itself has been proven through several studies by which this plant has the potential to serve as an antihistamine and a hypoglycemic drug, an inhibitor of uterine cancer cells (*in vitro*), an antioxidant agent, an anti-inflammatory drug, and has a potential to be developed into an anticancer drug.

Aim: To determine the total content of flavonoids and the number of the antioxidant activities in the scavenging free radicals by employing a DPPH method of a purified ethanol extract of the *P. macrocarpa* peel.

Method: The extraction method used in this study was a maceration method. The qualitative analysis was conducted by employing a thin layer chromatography (TLC) method characterized by a stain with a yellow fluorescent color at UV_{366} using $AICI_3$. The total content of the flavonoids was determined by employing a Chang method characterized with the use of rutin as a standard reference measured at a 411 nm wavelength. The qualitative assay of the antioxidant activities employed a thin layer chromatography with the ratio of n-butanol eluent: acetate acid: water amounting to 7: 2: 4. The antioxidant power of a purified extract of *P. macrocarpa* peel in the scavenging free radicals employed a 2,2-diphenyl-1-picrylhydrazyl method.

Results: The total content of the flavonoids in a purified ethanol extract of the *P. macrocarpa* peel was 120.53 mg RE/g; in other words, it accounted for 12.05% (w/w). In the quantitative assay employing the DPPH method with a UV-Vis spectrophotometer, the absorbance was observed at a 516-nm wavelength. The IC_{50} value of the extract was 131.203 ppm.

Conclusion: The total content of the flavonoids in a purified ethanol extract of the *P. macrocarpa* peel was 120.53 mg RE/g; it accounted for 12.05% (w/w). Moreover, based on the obtained IC_{50} value, the free radical scavenging activities in the extract were classified as a moderate antioxidant agent, with the IC_{50} value amounting to 131.203 ppm.

Keywords: antioxidant activity; flavonoid; God's crown; peel; UV-Vis spectrophotometry; DPPH.

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MICPS1-039-P: FORMULATING AND EVALUATING A CATECHIN-LOADED ETHOSOMAL CREAM FOR TOPICAL DELIVERY

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***Context*:** Catechin is one of the unstable polyphenolic derivatives in green tea [*Camelia sinensis* (L.) Kuntze] leaves. Moreover, it is hydrophilic. Therefore, it may be a problem for us in terms of its bioavailability when we try to deliver catechin by means of a transdermal route. To solve the problem, catechin was to be synthesized into ethosome.

Aim: Synthesizing catechin into ethosome and loading it into a cream formulation.

Method: The ethosome was synthesized by employing a cold method. Several optimization formulas were made by employing various compositions of ethanol and phosphatidylcholine. Then, the morphology was evaluated microscopically. Three spheric vesicles were obtained in the combined ethanol and phosphatidylcholine with the concentration ratios amounting to 10:1 (F1), 10:2 (F4) and 10:3 (F7). Then, those formulas were employed to determine the entrapment efficiency. The vesicle with the highest entrapment efficiency was then formulated into the creams by employing triethanolamine-stearate as the emulsifying agent with the concentration ratios amounting 1:2 (FC1); 1:3 (FC2) dan 1:4 (FC3). The stability test of the creams was conducted at 5°C and 35°C for 12 hours for each of the temperatures. Before and after the stability test, the creams were evaluated in their organoleptic, pH, homogeneity, viscosity, and type of emulsions.

Results: The entrapment efficiencies of the F1, F4, and F7 ethosomes were 92.19, 92.12 and 85.84%, respectively. Moreover, the emulsions had a specific odor, had viscous and white colors, and their pH ranged from 6.2 to 7.2. Moreover, all emulsions were homogenous, and the viscosity ranged from 122.66 Poise to 277.73 Poise. They were oil/water emulsions.

Conclusion: The catechin ethosome F1 had the highest entrapment efficiency. Furthermore, emulsion FC2 was the most stable, with its emulsifying agent ratio amounting to 1:3.

Keywords: catechin; ethosome; ethosomal cream; green tea leaves; TEA-stearate.

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MICPS1-040-PM: INVESTIGATING THE BACTERIAL AND FUNGAL BIOAEROSOL IN THE INDOOR AIR OF SEVERAL SELECTED TEACHING LABORATORIES AT UNIVERSITY OF CYBERJAYA

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***Context*:** Bioaerosols are defined as tiny airborne particles that may come from a source of a ventilation system, the presence of human and outdoor pollutants. Bioaerosols may spread diseases in immunosuppressed people. Hence, bioaerosols serve as an important criterion employed to provide a safe environment.

Method: Settle plate and contact plate methods were used for the passive air and surface sampling, while streak plate and Gram stain methods were used for the bacterial isolation and identification.

Results: The Pharmacognosy Laboratory had the highest number of bacterial bioaerosols (124 CFU) and fungal bioaerosols (38 CFU). Meanwhile, Medical Science Laboratory 2 had the lowest number of bacterial bioaerosols (12 CFU) and fungal bioaerosols (16 CFU). Medical Science Laboratory 1 had the second-highest number of bacterial bioaerosols (78 CFU) and fungal bioaerosols (32 CFU). Clean Room had the third-highest number of bacterial bioaerosols (44 CFU) and fungal bioaerosols (29 CFU). From the gram stain of the bacteria in all four laboratories, it was found out that 62.5% was Gram-positive *Cocci*, 18.75% was Gram-negative *Cocci,* and 18.75% was Gram-negative *Coccobacilli*.

Conclusion: The laboratories at the University of Cyberjaya are of good bioaerosol quality, and improvement could be made by increasing the frequency of cleaning activities and improving the ventilation conditions and fumigation.

***Keywords*:** bioaerosols; Gram-negative bacteria; Gram-positive bacteria.

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MICPS1-041-PCL: EFFECTS OF AN ETHANOL EXTRACT OF BERUWAS LAUT [*SCAEVOLA TACCADA* (GAERTN.) ROXB.] LEAVES ON GENTAMICIN-INDUCED NEPHROTOXICITY IN RATS

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Context: Kidney damage is a condition where there is impaired kidney function in secreting the waste products such as creatinine. Impaired kidney function can be caused by drugs that are nephrotoxic such as gentamicin. The Beruwas laut [*Scaevola taccada* (Gaertn.) Roxb.] contains flavonoids, terpenes, alkaloids, glycosides and saponins. Flavonoids have a positive impact on renal physiology. Moreover, they possess diuretic and natriuretic properties and exerting renoprotective.

Aim: To determine the therapeutic effects of ethanolic extract of *S. taccada* leaves on gentamicin-induced nephrotoxicity in some lab rats with renal histology and the level of the creatinine.

Method: A total of 18 rats were divided into 6 groups. Group 1 served as a normal group. Group 2, serving as a negative control, was given sodium carboxymethyl cellulose. Group 3, serving as a positive control, was given ketosteril. Moreover, groups 4, 5, and 6 serving as a test group were given a 165, 330, and 500 mg/kg BB dose, respectively. All treatment groups except the normal group were induced by 80 mg/kg BW gentamicin for 7 days. Then, the test preparation was administered for 7 days. The renal observations were scored based on their macroscopic and microscopic damage. The creatinine levels were measured on days 0, 8 and 15.

Results: The results of the scoring data were analyzed by employing a Kruskal-Wallis and the Mann-Whitney follow-up test. Based on the study results, it was found out that an ethanol extract of the sea nut leaves at 330 and 500 mg/kg BW dose had the same nephrotherapy effects as that of a ketosteril drug ($p>0.05$).

Conclusion: An ethanol extract of *Scaevola taccada* (Gaertn.) Roxb. leaves had some therapeutic effects on the rats' kidneys.

Keywords: beruwas laut; extract; nephron; renoprotection.

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MICPS1-042-PP: A NEW 10,15-CYCLOPHYTANE DITERPENE FROM *SYZYGIUM* SP.

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Context: The genus *Syzygium* belongs to the *Myrtaceae* family, including many species that may become medicinal plants. We found a probable new species of *Syzygium* in the Bengo Bengo Forest in the province of South Sulawesi, Indonesia. Its accurate identification is currently underway by some plant taxonomists. As a continuation of our phytochemical study on several Indonesian plants, this plant's isolation, structure elucidation, and biological evaluation were investigated.

Aim: Clarifying the structures isolated from the leaves of a *Syzygium* sp. and investigating the antiproliferative activities against human tumor cell lines (HTCLs).

Method: The leaves of the *Syzygium* sp. collected in Bengo Bengo were extracted with MeOH, which was partitioned between *n*-hexanes and MeOH/H_2O (9:1). Both layers were evaluated for their antiproliferative activities against HTCLs. The active hexanes layer was further purified by a combination of column chromatography (CC), medium pressure liquid chromatography, and preparative TLC. The structures of isolated compounds were elucidated by employing various spectroscopic techniques.

Results: The *n*-hexane layer of the leaves of *Syzygium* sp. inhibited the cell growth ranging from 85.3% to 100% against all of the tested HTCLs. Roughly fractionations by silica gel CC eluting *n*-hexanes/AcOEt generated seven fractions. Four antiproliferative fractions were selected for further purifications. As a result, a novel 10,15-cyclophytane diterpenoid and nine known compounds were isolated.

Conclusion: A new 10,15-cyclophytane derivative, namely 3,7-dimethyl-9-(2,2,6-trimethylcyclohexyl)nonane-1,2,3-triol, a known flavonoid, and eight terpenoids were isolated from the antiproliferative fractions of the leaves of a new species of *Syzygium* collected in Bengo Bengo forest.

Keywords: antiproliferative activity; 10,15-cyclophytane; *Syzygium* sp.

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MICPS1-043-PP: *IN VITRO* ASSESSMENT OF ANTI-INFLAMMATORY AND CYTOTOXICITY ACTIVITIES OF *VITEX COFASSUS* REINW. EX BLUME AGAINST LPS-INDUCED J774.1 CELLS

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Context: The main compounds found in the vitex species are terpenes, flavonoids, and lignans. Flavonoids have shown anti-inflammatory, anti-oxidative, anti-mutagenic, and anti-carcinogenic properties. Investigations on *Virex cofassus* Reinw. ex Blume (VCS) are limited. They were only conducted to compare the larvicides and anticancer properties of VCS to that of other *Vitex* species.

Aim: To determine the anti-inflammatory and cytotoxicity activities of *V. cofassus* against LPS-induced J774.1 cells.

Method: Initially, the *V. cofassus* leaves were extracted by using methanol and water. Next, the extracts were evaluated for their anti-inflammatory properties by employing J774.1 cells function as a macrophage. Then, after being triggered by LPS from *Escherichia coli*, these macrophages could produce nitric oxide (NO). The NO inhibition was evaluated by employing a Griess reagent. The cytotoxicity activities were determined by employing an MTT assay on J774.1 cells previously applied to the NO inhibitory assay. This assay was established to obtain a correlation between the NO inhibitory activity and the cytotoxicity against J774.1 cells

Results: The extracts effectively reduced the lipopolysaccharide (LPS)-induced NO levels when a 100 µg/mL concentration was employed. However, they showed low cytotoxicity, with viability cells in the cytotoxicity assay amounting to over 80%.

Conclusion: VCS leaves possessed some anti-inflammatory effects since they reduced NO in the LPS stimulated J774.1 cells.

Keywords: anti-inflammatory; cytotoxicity; J744.1; *Vitex cofassus*.

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MICPS1-044-PCL: EFFECTS OF AN EXTRACT OF JACKFRUIT (*ARTOCARPUS HETEROPHYLLUS* LAM.) LEAVES ON THE HISTOLOGICAL STRUCTURE OF THE LIVERS OF THE RATS INDUCED WITH ISONIAZID AND RIFAMPIN

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Context: Isoniazid and rifampin are some anti-tuberculosis drugs, the side effect of which is hepatotoxicity. An antioxidant can neutralize the toxic effects of these drugs on the liver. Jackfruit leaves (*Artocarpus heterophyllus* Lam.) have been identified as a source of various antioxidants.

Aim: To determine the effects of an ethanol extract of *A. heterophyllus* leaves on the histopathological structure of some rats' livers induced by isoniazid and rifampin. The histological structure was determined by employing a hematoxylin-eosin staining method. Fifteen male Wistar rats were divided into 5 groups. Group 1 served as the negative control with 1% sodium carboxymethylcellulose. Group 2, serving as the positive control, was given a 15.595 mg/kg BW Curliv® dose. Moreover, Groups 3, 4, and 5 serving as the test groups were given an ethanol extract of *A. heterophyllus* leaves at 100, 200, and 300 mg/kg BW dose, respectively. Before they were treated, the rats were induced with a 300 mg/kg BW isoniazid-rifampin dose taken orally for 3 days. The extract was administered orally once a day for 7 days. On the 8th day, the livers were collected for histologic observation.

Results: When treated with an extract of the *A. heterophyllus* leaves, the structure of the rats' damaged liver cells was repaired. Based on the histological observations, it was found out that the group treated with a 300 mg/kg BW dose had the best curative effects since only sinusoid better effect than other groups because only the sinusoid dilatation was seen in the liver section.

Conclusion: This study concluded that an ethanol extract of *Artocarpus heterophyllus* Lam. leaves could significantly improve the histology of the rat's liver.

Keywords*:* histological structure; isoniazid; jackfruit; leaves; rat liver; rifampin.

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MICPS1-045-P: OINTMENT FORMULATION FROM AN ETHANOL EXTRACT OF NUTMEG SEEDS (*MYRISTICA FRAGRANS* HOUTT.) AND INHIBITORY TESTS ON *STAPHYLOCOCCUS AUREUS* BACTERIA

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Context: Nutmeg (*Myristica fragrans* Houtt.) is an example of a medicinal plant. Many parts of the nutmeg, such as the fruit, seeds, and mace, used to produce nutmeg oil (essential oil), have extensively been employed for various purposes. *M. fragrans* seeds contain essential oil with the percentage ranging from 2 to 16% and the average amounting to 10%, fixed oil (fat oil) with the percentage ranging from 25 to 40%, around 30% of carbohydrates, and around 6% of proteins. Based on a study conducted by Gupta et al. (2013), it was found out that an extract of *M. fragrans* seeds with a 25% concentration showed any inhibitory activities with the inhibition zones amounting to 13.8 mm for *S. aur*eus bacteria and 9 mm for *E. coli* bacteria. *Staphylococcus aureus* is a Gram-positive cell that can cause food poisoning and mild or severe skin infections. In addition, it can also cause impetigo skin infections, folliculitis, erysipelas, and cellulitis. Infections resulting from the disease can be cured by employing a topical antibiotic preparation. Topical antibiotic preparations are available in various forms such as creams, ointments, powders and dressings. Local antibiotics use has diminished since they can result in local hypersensitivity of the skin or mucous membranes.

Aim: To determine the optimum concentration of an extract of the nutmeg seed. Moreover, its selected concentrations were 30, 37.5 and 45%, and they would be used as the ointment formulations in terms of their physical properties and capability of inhibiting *Staphylococcus aureus* bacteria.

Method: Extracts of *M. fragrans* seeds were formulated in the forms of an ointment by employing a melting method with the extract concentrations of the nutmeg varying from formula 1 (30%), formula 2 (37.5%), to formula 3 (40%).

Results: A *M. fragrans* seed ointment had met all of the requirements of an ideal topical preparation. Moreover, the tests included the organoleptic, homogeneity, dispersion, and pH level tests. Furthermore, based on the inhibition test on *Staphylococcus aureus* bacteria, it was found out that the inhibition zone diameters of ointments with 30, 37.5, and 40- concentrations were 10.75, 11.31, and 13.03 mm, respectively.

Conclusion: The concentration of the *M. fragrans* seed extract did not affect the physical properties of the ointment preparation. In contrast, the concentration of each *M. fragrans* seed extract was very influential on the inhibition. The higher the concentration of *M. fragrans* extract was the larger the diameter of the formed inhibition zone would be.

Keywords: hydrocarbons; nutmeg; ointment; *Staphylococcus aureus*.

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MICPS1-046-PP: ETHNOPHARMACOLOGY STUDY ON VARIOUS MEDICINAL PLANTS USED BY THE BUGINESE IN COROWALI, THE REGENCY OF BARRU, THE PROVINCE OF SOUTH SULAWESI, INDONESIA

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Context: Ethnopharmacology studies are an approach employed to explore local knowledge of a specific ethnicity regarding the use of its medicinal plants. Each of the ethnicities has its medicinal plants, which are empirically handed down from their ancestors.

Aim: To identify various kinds of medicinal plants, organs of the used plants, the way to use the plants, the ailments the plants' cure, and the pattern of traditional medicines of the Buginese in the village of Corowali.

Method: In this study, a purposive sampling technique was employed. The data were through semi-structured interviews on questionnaire media with open-ended question types

Results: There were 31 families, 45 genera, and 40 species of medicinal plants. These medicinal plants were efficacious in treating hypertension, diarrhea, wounds, diabetes, cholesterol, cough, asthma, fever, acne, dysentery, hemorrhoids, fever, stomach pain, toothache, gout, internal diseases, swelling, flatulence, vaginal discharge, ulcers, headaches, and smallpox. The most commonly used were leaves. The medicinal plants were prepared by employing an infusion method. The highest Use Value (UV) was 1. The highest Informant Consensus Factor (ICF) was 1.00. Moreover, the highest Fidelity Level (FL) was 100%.

Conclusion: The people of Corowali Village still extensively use various plants in treating their diseases.

Keywords: ethnopharmacology; Buginese; Corowali.

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MICPS1-047-PM: EFFECT OF N-ACETYL CYSTEINE AND *AGARICUS BISPORUS* ON MALONDIALDEHYDE (MDA) IN A MICE MODEL OF MALARIA

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Context: Malaria is an infectious disease whose morbidity is still high in the world. Reactive oxygen species (ROS) that excessively can attack the cells of any organ, for example, in the pulmonary organs. Glutathione is one of the antioxidants that plays a role in binding to ROS from cells. Antioxidant supplementation can be used to reduce the severity of malaria infection. N-Acetyl cysteine supplementation can help supply the cysteine substance needed in the glutathione synthesis process. *Agaricus bisporus* have significant potential, such as anticancer, antioxidants.

Aim: To investigate the effects of N-acetyl cysteine and *Agaricus bisporus* on malondialdehyde (MDA) in a mice model of malaria.

Method: BALB/c male mice were infected with *Plasmodium berghei* and treated with N-acetyl cysteine and *Agaricus bisporus*. Lung tissue samples were collected after one, three, five, seven or ten days of infection. They measured malondialdehyde (MDA) levels by thiobarbituric acid reactive substance (TBARS).

Results: The results showed that the MDA level of *Agaricus bisporus* supplementation had no effect on reducing the MDA value when compared to the positive control group, while supplemented N-acetyl cysteine had a significant effect on MDA production in mice with hyperparasitemia on the tenth day compared to positive controls.

Conclusion: The administration of N-acetyl cysteine can reduce oxidative stress caused by *Plasmodium* infection and potentially as adjuvant therapy in the treatment of malaria infection.

Keywords: N-acetyl cysteine; *Agaricus bisporus*; malaria; malondialdehyde.

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MICPS1-048-PCH: VALIDATING THE ANALYSIS METHOD OF TANNIN CONTENT ON A ETHANOL EXTRACT OF GUAVA LEAVES (*PSIDIUM GUAJAVA* L.) BY EMPLOYING A UV-VISIBLE SPECTROPHOTOMETRY

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Context: A study on the analysis method validation of tannin content on an ethanol extract of guava leaves *(Psidium guajava* L.*)* has been done using UV-visible spectrophotometry. Validation of the analysis method is a way to assess a parameter.

Aim: To determine the tannin content on an ethanol extract of *P. guajava* leaves that met the validation criteria such as selectivity analysis, linearity, precision, detection limits, quantification limits, and accuracy using spectrophotometry.

Method: The validation of the analysis method of tannin content on an ethanol extract of *P. guajava* leaves was determined by employing a UV-visible spectrophotometer using tannic acid as a standard. Moreover, the measurement was conducted at a 738.05 nm wavelength.

Results: The validation on an ethanol extract of *P. guajava* leaves included several parameters such as linearity Y = bx + a. correlation coefficient value (r) = 0.999, the coefficient value of the regression function (Vxo) = 0.5003%, precision with varied coefficient value (KV) = 0.0352%, the limit of detection (LOD) = 0.01007 ppm, the limit of quantification (LOQ) = 0.03359 ppm, the percentage of recovery = 98.063% ± 0.0024%, and the average content of tannin on an ethanol extract of *P. guajava* leaves = 274.145 mg TAE/g

Conclusion: The analytical method possessed a good validity since the study met the validation parameters of the analytical method.

Keywords: *Psidium guajava*; tannin; UV-visible spectrophotometry; validation.

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MICPS1-049-PCH: POTENTIALS OF VARIOUS EXTRACTS OF BUTTON MUSHROOM (*AGARICUS BISPORUS*) TO INHIBIT ALFA-GLUCOSIDASE ENZYMES

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Context: Button mushrooms (*Agaricus bisporus*) are extensively used for many purposes, such as an antioxidant agent, an antibacterial agent, an anti-inflammatory drug, an anti-tumor drug, and the body's defense system. One of the benefits of antioxidants is that they can inhibit alpha-glucosidase enzymes. Inhibiting the action of those enzymes can effectively reduce the digestion of complex carbohydrates and their absorption so as to reduce an increased postprandial glucose level in a person with diabetes mellitus.

Aim: To determine and observe the ability of n-hexane extract, ethyl acetate, and ethanol extract of *A. bisporus* to inhibit alpha-glucosidase enzymes.

Method: The *A. bisporus* was extracted by employing a stratified maceration. The inhibition test of the alpha-glucosidase enzyme was conducted spectrophotometrically with a 410 nm maximum wavelength.

Results: The IC_{50} values of the alpha-glucosidase inhibition tests for n-hexane, ethyl acetate, and ethanol extracts of *A. bisporus* were 70.79 µg/mL (less active), 18.70 µg/mL (very active), and 29.64 µg/mL (active).

Keywords: *Agaricus bisporus*; alpha-glucosidase enzyme; IC_{50}.

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MICPS1-050-PP: TOXICITY ASSAY OF AN ETHANOL EXTRACT OF RAMBUTAN SEEDS (*NEPHELIUM LAPPACEUM* L.) BY EMPLOYING A BRINE SHRIMP LETHALITY TEST

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Context: Rambutan (*Nephelium lappaceum* L.) is a plant belonging to the *Sapindaceae* family. *N. lappaceum* seeds have an antioxidant activity that can potentially be used in an initial screening in toxicity tests.

Aim: To determine the LC_{50} value of an ethanol extract of *N. lappaceum* seeds against shrimp larvae of *Artemia salina* Leach.

Method: The samples of *N. lappaceum* seeds were extracted with 96% ethanol using a maceration method. The ethanol extract was prepared at various concentrations such as 25, 50, 100, 500 and 1000 ppm; moreover, the seawater served as a control. Each concentration used 10 shrimp larvae with 3 replications. The observations were made after the 24 hour-testing by counting the number of dead shrimp larvae. The LC_{50} value was measured by employing a probit analysis method.

Results: The LC_{50} value of the ethanol extract of *N. lappaceum* seeds was 48.75 ± 7.07 µg/mL. It meant that an ethanol extract of *N. lappaceum* seeds could potentially be used for toxicity to *Artemia salina* Leach shrimp larvae with the LC_{50} value amounting to <1000 ppm.

***Keywords*:** brine shrimp lethality test; *Nephelium lappaceum*; rambutan seed; toxicity assay.

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MICPS1-052-PP: STUDY OF THE ANTIOXIDANT CAPACITY OF AN EXTRACT OF BAJAKAH (*SPATHOLOBUS LITTORALIS* HASSK.) USING CUPRAC, DPPH, AND FRAP METHODS

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***Context*:** Bajakah (*Spatholobus littoralis* Hassk.) is one of the typical plant's natives to Kalimantan island. It has the potential to be a drug such as an antioxidant agent due to its contained secondary metabolites.

Aim: Measuring the antioxidant capacity of the red and white varieties of the *S. littoralis*.

Method: The plant was extracted by employing a reflux method using a solvent gradient of *n*-hexane, ethyl acetate, and 96%ethanol. The capacity of the antioxidants against ascorbic acid and Trolox was measured by employing CUPRAC, DPPH, and FRAP methods.

Results: The ethanol extract showed the highest antioxidant capacity in the CUPRAC and FRAP methods, while the *n*-hexane extract showed the highest antioxidant activity in the DPPH method on both varieties of the *S. littoralis* plants. Each of the methods significantly provided various values of the antioxidant capacity. In the CUPRAC and FRAP methods, the ethanol extract of a white variety of *S. littoralis* showed the highest antioxidant capacity. In contrast, in the DPPH method, the n-hexane extract of a red variety of *S. littoralis* showed the highest antioxidant capacity.

Conclusion: Of those methods, the FRAP method provided a positive correlation to the sample. Therefore, that method was the most suitable method used to measure the antioxidant capacity of the *S. littoralis*.

Keywords: bajakah; CUPRAC; DPPH; FRAP; reflux.

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MICPS1-053-PP: ISOLATION AND IDENTIFICATION OF AN ANTIOXIDANT COMPOUNDS OF AN ETHANOL EXTRACT OF *ETLINGERA ALBOLUTEA* A.D.POULSEN & MOOD RHIZOME

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Context: Antioxidants are compounds that scavenge free radicals. *Etlingera alba* (Blume) A.D.Poulsen is one of the plants that exhibit antioxidant activity. Moreover, it is also endemic to Southeast Sulawesi, Indonesia.

Aim: To isolate and identify the antioxidant compounds from a rhizome extract of *E. alba.*

Method: Isolation and identification of the antioxidant compounds from a rhizome extract of *E. alba* have been conducted to explore the utilization of *E. alba. E. alba* rhizome was macerated and evaporated to obtain the concentrated extract. Then, the process was continued by TLC-DPPH. The antioxidant compound was isolated by employing a vacuum liquid chromatography to obtain the isolate.

Results: Based on the results of LC-MS/MS, the isolate exhibited one peak at a 9.50 minutes retention time with the peak fragmentation of molecular ions at m/z 313.1789, 179.0732, 161.1093, 151.0869, 137.0673, 133.1067, and 119.0954, which was translated as yakuchinone A.

Conclusion: In the quantitative evaluation of antioxidant activity, it was found out that yakuchinone A could capture DPPH radicals with the IC_{50} value amounting to 22.98 M.

Keywords: antioxidant compound; antioxidant potential; *Etlingera alba*; rhizome; yakuchinone A.

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MICPS1-054-PCH: A MOLECULAR DOCKING STUDY OF DERIVATE COMPOUNDS OF *N*-(BENZOYLCARBAMOTIOIL)-*N*-PHENYLBENZAMIDE ON SUBSTITUTED CH_3, $C(CH_3)_3$, OCH_3, $N(CH_3)_2$, AND HALOGEN (CL, BR, I) OF BENZOYLKARBAMOTIOIL RING AS AN ANTI-CANCER DRUG CANDIDATE

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Context: In studies *on silico* are experiments or assays conducted by employing a computer simulation method. Moreover, they are used to initiate the discovery of a new medicinal compound.

Aim: To determine the potential of anticancer activity of N-(benzoylcarbamotioil)-N-phenylbenzamide and its derivatives against the ribonucleotide reductase receptor (2EUD) by taking into consideration several parameters such as physicochemical properties and toxicity through a *pkCSM* program.

Method: The biological activities were predicted by employing a molecular modeling using a Molegro Virtual Docker program. Moreover, the docking results were in the form of a bond energy represented by the Rerank Score (RS) value. The smaller the RS value of a compound was, the more stable the ligand-receptor bonding would be. Therefore, it was predicted to have high activity.

Results: This study tested 21 N- (benzoylcarbamotioil)-N-phenylbenzamide derivatives, 10 compounds had the best interaction with the 2EUD receptor.

Keywords: anticancer; *in silico*; molegro virtual docker; rerank score; ribonucleotide reductase receptor.

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MICPS1-055-PCH: *IN VITRO* PHYTOCHEMICAL SCREENING AND ANTI-CHOLESTEROL EFFECTIVENESS TESTS ON AN ETHYL ACETATE EXTRACT OF AVOCADO SEEDS (*PERSEA AMERICANA* MILL.)

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Context: Cholesterol is an essential compound found in the human body. However, the excessive amount of cholesterol can result in atherosclerosis, which can lead to various cardiovascular diseases such as hypertension, coronary heart disease and stroke. Therefore, an anti-cholesterol agent is needed to prevent an increased level of cholesterol.

Aim: To determine the phytochemical compound of avocado seeds (*Persea americana* Mill.) and demonstrate this sample's ability as an anti-cholesterol agent.

Method: The potential of the ethyl acetate extract of *P. americana* seeds to be an anti-cholesterol agent was determined by a decreased cholesterol concentration in the extracts.

Results: The results showed that the extract contained some alkaloids (after Dragendorff was added, the orange deposits were formed, and so were Mayers (formed white deposits), flavonoids (red solution), saponin (foaming solution), and tannins (dark green solution). The concentrations used in the study were 50, 1500, 2500, 3500, and 4500 ppm, and the obtained percentages were 41.606, 46.918, 51.012, 56.102, and 62,72%, respectively. Moreover, the decreased cholesterol levels in ezetimibe with the concentrations amounting to 200, 400, 600, 800, and 1000 ppm were 29.220, 39.278, 47.401, 58.083, and 65,761%. Meanwhile, the inhibition values of the extracts with the concentrations amounting to 500, 1000, 2500, 3500, and 4500 ppm were 40.085, 45.202, 49.147, 54.051, and 60.447%. Therefore, the obtained EC_{50} value was 2,520.6 ppm, and the EC_{50} value of ezetimibe was 685.102 ppm.

Conclusion: The ethyl acetate extract of *P. americana* seeds could be developed as an anti-cholesterol agent.

Keywords: anti-cholesterol; avocado seeds; phytochemical screening.

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MICPS1-056-PCL: ANTIDIABETIC ACTIVITY OF A COMBINED EXTRACT OF TAMARIND LEAVES (*TAMARINDUS INDICA* L.) AND AJWA DATE SEEDS (*PHOENIX DACTYLIFERA* L.) ON DIABETIC MICE (*MUS MUSCULUS*)

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Context: Tamarind leaves (*Tamarindus indica* L.) and ajwa date seeds (*Phoenix dactylifera* L.) have scientifically proven to have some anti-diabetic effects with a single dose.

Aim: To determine the effective dose of a combined extract of *T. indica* leaves and *P. dactylifera* seeds employing to lower the level of the blood glucose on some alloxan-induced diabetic mice (*Mus musculus*).

Method: First, both *T. indica* leaves and *P. dactylifera* seeds were extracted by employing maceration and soxhlation methods using 96% ethanol. Then, each of the extracts was qualitatively examined by employing a phytochemical screening. The anti-diabetic activities of both of the extracts were determined by employing a pre- and post-test-controlled group design method. This method consisted of two control and five test groups; there were a positive control group (glibenclamide 0.65 mg/kg), a negative control group (sodium CMC, 1%), group A (*T. indica* leaves extract, TL, 280 mg/kg), group B (*P. dactylifera* seeds extract, DS, 392 mg/kg), group C (TL:DS, 75:25), group D (TL:DS, 50:50), and group E (TL:DS, 25:75). Those extracts were orally given on the seventh day after the alloxan was induced (224 mg/kg, i.p). The levels of the blood glucose measured 60 minutes, 120 minutes, and 180 minutes after the administration.

Results: The total lowered levels of the blood glucose of each of the combined extract groups were 24 mg/dL (group C), 15 mg/dL (group D), and 20 mg/dL (group E).

Conclusion: The combined extract group effectively lowering the level of the blood glucose was group C (TL:DS, 75:25), with the dose of each extract amounting to 210 mg/kg and 98 mg/kg, respectively.

***Keywords*:** ajwa date seed; alloxan; anti-diabetic; combination extract; tamarind leaves.

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MICPS1-057-PP: PERCEPTIONS OF ATTITUDE AND BEHAVIOR OF THE COMMUNITY ON THE USE OF GINGER DURING THE COVID-19 PANDEMIC IN BUNTUSU VILLAGE, TAMALANREA, MAKASSAR

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Context: Since Indonesia declared the Covid-19 outbreak as a pandemic in April 2020, there have been many victims of the Covid-19 due to the outbreak caused by that SarCOV-2 virus. The government's recommendation to implement health protocols by washing hands, physical and making a social distancing, wearing masks, staying at home, and having a healthy lifestyle influences people's attitudes and behavior in that they started consuming supplements and traditional medicines. So far, there have been no drugs yet that can treat the disease and stop the spread of this virus, thus making people tend to return to nature (back to nature) using some medicinal plants such as ginger. Ginger is a very familiar plant and has become a health drink to the people in Makassar, known as Sarabba. It has several benefits, such as maintaining the stamina and serving as a traditional medicine that can reduce fever, relieve aches, overcome coughs, and reduce joint pain. At the beginning of the pandemic, the use of ginger in Indonesia has increased, thus making it difficult to find the raw materials and creating a high selling price of ginger in the market.

Aim: This study was aimed at determining the perception of people's attitudes and behavior towards the use of ginger during the covid-19 pandemic in the village of Buntusu, the district of Tamalanrea, Makassar.

Methods: In this study, an observational or survey method was employed by giving questionnaires to 110 respondents employing a purposive sampling method with an online questionnaire and interviews in the village of Buntusu, the district of Tamalanrea, Makassar. The data were processed in a qualitative descriptive manner in the form of percentages of the variable data of the study.

Results: Based on the survey data on the respondents' knowledge of Covid-19, it was found out that, so far, they perceived that no drugs had been found to cure the Covid-19, and the percentage was 98% with very good criteria. The of the people's perception of the behavior in Buntusu Village, Makassar towards any efforts made to prevent the spread of the Covid-19 by implementing some health protocols was deemed to be very good, and a very good percentage was obtained from the respondents' answers on any efforts made to prevent the spread of the Covid-19 with a healthy lifestyle and any efforts made to increase the immune system (immunity) that would prevent the contraction of the Covid-19 virus infection. Many respondents perceived the use of ginger a preventive effort during the covid-19 pandemic made to increase the immune system (immunity) and overcome various symptoms of Covid-19, such as reducing fever, overcoming headaches, reducing fever, eliminating headaches, treating coughs, and curing arthritis.

Conclusion: The people in Buntusu Village, Makassar, made considerable efforts in their behavior and attitude toward consuming ginger during the covid-19 pandemic.

Keywords: attitudes; behavior; Buntusu village; Covid-19; ginger; Makassar.

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MICPS1-058-PP: FERTILITY AGENTS OF PARIJOTO FRUITS (*MEDINILLA SPECIOSA* BLUME) FROM KUDUS, CENTRAL JAVA, INDONESIA, BY EMPLOYING A BIOASSAY GUIDED FRACTIONATION

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Context: Infertility still poses a problem all over the world. Parijoto (*Medinilla speciosa* Blume) fruits from Kudus, Central Java, Indonesia, improve the quality of spermatozoa and testicular histopathology. It is necessary to purify the *M. speciosa* fruits so that the plants can be preserved and the types of their bioactive compounds can be identified.

Aim: To determine the activity of *M. speciosa* fruits as a fertility agent by employing a bioassay-guided fractionation method in terms of the increased level of testosterone *in vivo*.

Method: This study employing a post-test-only control group design 36 male rats of the Sprague Dawley strain serving as the samples. The samples were then divided into 6 groups, namely the normal (I), methanol extract of *M. speciosa* fruits at a 100 mg/kg BW dose (II), the methanol extract of *M. speciosa* fruits at a 250 mg/kg BW dose (III), the methanol extract of *M. speciosa* fruits at a 500 mg/kg BW dose (IV), the methanol fraction at a 500 mg/kg BW dose (V) and the n-hexane fraction at a 500 mg/kg BW dose (VI). The test animals were orally treated for 2 weeks. The levels of testosterone were measured by employing an ELISA reader. The data were analyzed by employing an ANOVA, which would be continued with an LSD.

Results: The average testosterone levels (ng/mL) in groups I-VI were 695.35 ± 57.63; 544.39 ± 47.69; 590.33 ± 64.47; 597.06 ± 35.94; 830.55 ± 88.41; 600.35 ± 42.13, respectively. The normal group had significant differences from all of the treatment groups. Moreover, the methanol fraction group also differed from the extract and n-hexane fraction groups ($p<0.05$).

Conclusion: *M. speciosa* fruits had some activities as a fertility agent in terms of the increased level of the testosterones. Moreover, based on the results of the bioassay-guided fractionation test, it was also concluded that the methanol fraction served as the most active fraction.

Keywords: bioassay-guided fractionation; fertility agent; parijoto fruit.

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MICPS1-059-PCH: A STUDY OF N-ALLL-N- (BENZOILKARBAMOTIOIL) SUBSTITUTED BENZAMIDE DERIVATIVES CH_3, $C(CH_3)_3$, OCH_3, $N(CH_3)_2$ AND HALOGEN (CL, BR, I) ON BENZOILCARBAMOTHIOIL RINGS AS ANALGESIC DRUG CANDIDATES

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Context: Some thiourea derivatives have pharmacological activities such as anti-HIV or antiviral, antitubercular, analgesic, and anticancer properties. One of the urea derivatives is N-allyl-N-(benzoylcarbamotioil) benzamide assumed to have an analgesic activity, so it is necessary to examine the analgesic activity by employing a molecular docking method.

Aim: To predict, provide some hypotheses, and provide some discoveries or advances in medicine. In this study, one of the uses of the *in silico* test was molecular docking employed to screen the structure-based compounds with computational assistance.

Method: The analgesic activity of N-alyl-N-(benzoilcarbamotioil) benzamide derivatives was assayed based on the effects of the addition of CH_3, OCH_3, $C(CH_3)_3$, $N(CH_3)_2$, and halogens (Cl, Br, I) on the ortho, meta, and para positions to be selected as a candidate for the analgesic drug. The toxicity and physicochemistry of the compounds of those 21 derivatives of N-alyl-N-(benzoylcarbamotioil) benzamides were predicted by employing a pkCSM program and a Protox Online Tool.

Results: Of those 21 derivatives of N-alyl-N-(benzoylcarbamotioil) benzamides, 18 compounds had a better analgesic activity, while the three others had a decreased activity and some hepatotoxic effects.

Conclusion: There were 6 best compounds in terms of their increased analgesic activity according to the value of the rank score, the level of toxicity, and amino acids that could be bound.

Keywords*:* analgesics; N-allyl-N-(benzoylcarbamotioil) benzamide; molecular docking.

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MICPS1-060-P: ACUTE TOXICITY TESTS OF A METHANOL EXTRACT OF BAJAKAH TRUNKS (*SPATHOLOBUS LITTORALIS* HASSK.) ON MALE MICE (*MUS MUSCULUS*)

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Context: One of the biodiverse potentials to serve as traditional medicine is bajakah tampala (*Spatholobus littoralis* Hassk.). *S. littoralis* is an herbal plant, all parts of which can extensively be used.

Aim: To determine the acute toxicity with an LD_{50} value and the effects on the behavior and macroscopic organs after the administration of *S. littoralis* methanol extract.

Method: The test animals employed in this study were 50 male mice divided into 2 replications. In a replication, 5 groups consisted of 5 mice in each group. The methanol extract of the *S. littoralis* stem was given in various doses, namely 1, 10, 100, and 1000 mg/g BW in mice. The observation activities, including the surgery and macroscopic observations, took place for 14 days.

Results: The LD_{50} value for replication A was 17.782 mg/kg BW, and the LD_{50} value for replication B was 68.128 mg/kg BW.

Conclusion: It was found out that the liver, the heart, and the stomach were damaged. The mice's organ weights were analyzed by employing ANOVA and Kruskal Wallis tests. Based on the data analysis, it was found out that replication A affected the gastric organs since there was a significant difference ($p<0.05$). Meanwhile, replication B affected no organs since there was no significant difference ($p>0.05$).

Keywords: bajakah rod; LD_{50}; macroscopic; toxicity.

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MICPS1-061-PCL: SYSTEMATIC REVIEW: EFFECTIVENESS OF THE USE OF SOME VITAMINS ON THE PREGNANT WOMEN AS AN EFFORT TO PREVENT PRE-ECLAMPSIA

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***Context*:** Pregnant women need a level of nutrients. Various kinds of vitamins consumed in the early pregnancy period may affect the conditions and the growth of the baby and the health of the pregnant women. The incidence of pre-eclampsia posing a risk for the mothers and the newly-born babies is one that appears most often in pregnant women.

***Aim*:** Assessing various vitamins playing an important role in preventing pre-eclampsia.

***Method*:** In this study, a PRISMA method assessed 13 articles obtained from the PubMed and ResearchGate databases.

***Results*:** Several vitamins needed by pregnant women include calcium, folic acid, iron, mecobalamin, zinc, vitamins A, E, and pyridoxine. All of those vitamins positively impact pregnant women in that they support the baby's growth and maintain pregnant women's health. Folic acid and calcium play an important role in maintaining blood pressure. Moreover, they are closely related to the release of homocysteine and endothelial dysfunction occurring in the first and the second trimesters. Zinc itself plays a role in maintaining mental health, the problems of which usually occur due to premenstrual syndrome and the pregnancy in the early trimester since the risk of blood pressure disorders was caused by a mental health problem. However, none of them shows an association with the incidence of pre-eclampsia.

***Conclusion*:** The most important vitamins employed to maintain blood pressure during pregnancy are folic acid and calcium.

***Keywords*:** effectiveness; pre-eclampsia; pregnant; preterm birth; vitamin.

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MICPS1-062-HS: ANALYZING THE ANTIOXIDANT AND ORGANOLEPTIC QUALITIES OF THE HERBS *MORINGA OLEIFERA* L. AND CINNAMON [*CINNAMOMUM BURMANNI* (NEES & T.NEES) BLUME]

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Context: Tea is a kind of drink in great demand by various groups. The herbs moringa (*Moringa oleifera* L.) and cinnamon [*Cinnamomum burmanni* (Nees & T.Nees) Blume] are plants commonly benefited from by the people of Indonesia; moreover, they possess various extraordinary health benefits and are cost-effective. Furthermore, it is believed that they contain some secondary metabolite compounds such as flavonoids, phenolics, alkaloids, steroids, tannins, saponins, anthraquinones, and triterpenoids.

Aim: To determine the antioxidant and organoleptic qualities of *M. oleifera* leaves and *C. burmanni* herbs contained in various tea products.

Method: In this study, the method included several procedures such as making *M. oleifera* leaf powder, making *C. burmanni* powder, making a solution of *M. oleifera* and *C. burmanni* herbal drinks, and conducting several tests. Moreover, 2 g of the *M. oleifera* leaves and *C. burmanni* (3:1) were considered and put in a tea bag and brewed with 100 mL warm water with a 50°C. Furthermore, the antioxidant and the organoleptic levels and the air content were analyzed.

Result: Based on the results of ANOVA tests with the p-value lower than <0.05, it was found out that *M. oleifera* leaf tea and *C. burmanni* had such significant antioxidant properties, while, in terms of its quality, the water content was <8%. Both findings were shown by sample T2.1 dried at 70°C.

Conclusion: It can be concluded that *M. oleifera* leaf tea and *C. burmanni* possess some antioxidant effects, and, when dried at a 70°C temperature, they can serve as a standard quality product.

Keywords: antioxidant; cinnamon; leaf; moisture content; moringa; tea.

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MICPS1-063-PP: ANTIOXIDANT ACTIVITIES, TOTAL PHENOLIC CONTENTS OF AN EXTRACT OF ETHYL ACETATE AND AN N-HEXANE EXTRACT OF KEBEN [*BARRINGTONIA ASIATICA* (L.) KURZ] LEAVES

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Context: Plants are potential sources of antioxidants in the forms of secondary metabolites such as flavonoids and phenols. Ethnobotanical studies have undoubtedly impacted the development of many new drugs positively.

Aim: To observe the antioxidant activities and the phenolic content of ethyl acetate and n-hexane extracts of keben leaves [*Barringtonia asiatica* (L.) Kurz].

Method: The total values of the phenolic compounds were determined by employing a Folin-Ciocalteau method, while the antioxidant activities were estimated by employing an extract of 2,2'-diphenyl-2-picrylhydrazyl (DPPH), ethyl acetate exhibiting the highest antioxidant properties. Moreover, the phenol content was associated with DPPH has promised such antioxidant properties. Moreover, they can be taken advantage of to prevent any oxidative stress-based diseases.

Results: The IC_{50} values of extracts of ethyl acetate and n-hexane of *B. asiatica* leaves were 46.163 ± 0.730 µg/mL and 36.849 ± 0.341 µg/mL, respectively. The phenols yielded with a Folin-Ciocalteu reagent met the approval of ethyl acetate, and n-hexane extracts of *B. asiatica* leaves at 60 mg/L with the means amounting to ± SD (% w/w ER) of 78.99 ± 0.071 and 72.34 ± 0.871, respectively.

Conclusion*:* The two extracts can have such a high antioxidant level.

***Keywords*:** antioxidant*; Barringtonia asiatica;* DPPH*;* keben; leaves; total phenolic.

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