

Series: **Advances in Health Sciences Research**

Proceedings of the 4th International Conference on Sustainable Innovation 2020–Health Science and Nursing (ICoSIHSN 2020)

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Welcome to the Proceeding of ICoSI 2020 – Health Science and Nursing. The Fourth International Conference on Sustainable Innovation 2020 has developed this proceeding. This event was held by Universitas Muhammadiyah Yogyakarta. It's a continuous work from the third one in 2019. This book is presenting one track from 4 tracks that are composing the ICoSI 2020. The 4th International Conference on Sustainable Innovation 2020 brings out the issues of the Sustainable Development Goals that the world, especially Indonesia, is still striving to face.

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Formulation and Antioxidant Effectivity Test of Single Bulb Black Garlic Lotion With DPPH Method (1,1-diphenyl-2-picrylhydrazyl)

Abdul Aziz Setiawan, Meta Safitri, Dwi Titan Armiyani, Ghany Herianto, Edy Marwanta
Single bulb black garlic is a fermented product of single-bulb garlic for 30 days with a certain temperature and humidity. It experiences a Maillard reaction and has an increased content of active compounds. Single bulb black garlic contains secondary metabolites in the form of flavonoids, tannins, and...

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Relationship Between Maternal Anxiety Level and Ejection of Breast Milk in the First 24 Hours of Postpartum Period

Alfaina Wahyuni, K.P Dwi Aji, Supriyatningsih

Breast milk is essential food for a baby's health. Many factors influence the success of breastfeeding, one of which is maternal anxiety. The infant mortality rate in Tegal is the highest in Central Java. The problem of breastfeeding supports the high rate of infant mortality. This study aims to determine...

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Expression of MicroRNA-155 in Hepatitis B Virus-Related to Hepatocellular Carcinoma

Dede Renaldi, Juwita Radityaningsih, Puji Lestari, Nanda Qoriansas, Didik Setyo Heriyanto, Neneng Ratnasari, Sofia Mubarika Haryana

Hepatitis B virus (HBV) infection is still a global health problem and a major precipitation factor for hepatocellular carcinoma (HCC). MicroRNAs (miRNAs) consist of small non-coding RNAs that regulate gene expression at the post-transcriptional level, thus involving in primary biological processes,...

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Farmers Knowledge on Pesticide Safety Management in Ponorogo

Eka Rosanti, Ratih Anhdika Akbar Rahma, Mahmudah Hamawi, Dian Afif Arifah

Agricultural activities in Ponorogo District are one of the largest contributors to the economy. However, agricultural activities related to pesticide use need attention. Based on the previous research, there were 36.7% of farmers in one of the villages in Ponorogo District were at a very high risk of...

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The Body Mass Index, Blood Glucose Level and the Quality of Life of Diabetes Mellitus Type 2 Patients in Primary Health Care: Cross-Sectional Study

Rima Tri Maylani, Akrom Akrom, Titiek Hidayati, Yenny Sri Wahyuni, Muhammad Muhlis

Obesity is a risk factor for DM. Quality of life is one of the parameters for evaluating the current clinical output of diabetes mellitus patients. Research has been conducted to determine BMI's relationship with blood sugar levels and improve DM patients' quality of life in primary care. This cross-sectional...

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Performance of Laboratory Critical Value on Clinical Laboratory Services in Supporting Patient Safety

L Rosita, P Edy.

Background. Patient safety is a cornerstone of healthcare quality, including clinical laboratory services. Management of patients related to the patient safety includes all aspect of services, which covers the process of diagnosing, giving therapy, and predicting the prognosis. An important form of clinical...

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[Climate Variability and the Incidence of COVID-19 in Jakarta](#)

Fibriani Endah Puspa Dewa, Lidya Saras Wati, Ahmad Ma'ruf Muttaqin Aminanto, Fanana Firdaus, Siska Marina, Yuniar, Sani Rachman Soleman

Since the first case was detected on March 3, 2020, the incidence of COVID-19 has exponentially increased in Jakarta. Some theories claimed that COVID-19 virus activities were affected by climate variability. The aim of this study is to search and predict the correlation between daily incidences of COVID-19...

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[Relationship of Age, Body Mass Index, and Gravida in Pregnant Women With Preeclampsia in Muhammadiyah Hospital Surabaya](#)

Maya Rafida, Nur Mujaddidah Mochtar, Ninuk Dwi Artiningtyas, Muhammad Anas

Background/aim: Preeclampsia is one of the causes of increased maternal mortality. The rate in East Java Province reached 91 per 100,000 live births. The highest cause of maternal death in 2016 was preeclampsia/eclampsia, which was 30.90% or 165 people. This study aims to determine the relationship of...

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[Effects of Serum Cystatin C Levels on Increased Systolic and Diastolic Blood Pressure in the Elderly With Normal Renal Function](#)

Erlina Marfianti, Auliya Nisa

Increased systolic and diastolic blood pressure is a result of the process of blood vessel degeneration that often occurs in the elderly. A number of previous studies have shown that cystatin C is a strong predictor of cardiovascular and mortality risk in elderly individuals though the mechanism remains...

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[Association Between CD30 Expression and EBV-DNA Detection Status With ABVD Chemotherapy Response in Classical Hodgkin Lymphoma Patients](#)

Bethy S Hernowo, Hermin A Usman, Zahra Nurushofa, Etis Primastari, Aryanti

CD30 is expressed in Hodgkin lymphoma (HL). To date, research efforts have focused on understanding its contribution to lymphomagenesis through anti-apoptotic mechanisms, and its effect on cell survival. It has been suggested that Epstein-Barr virus (EBV) plays a role in the pathogenesis of positive...

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[High Proportion of Vitamin D Deficiency in Male Adolescents in Yogyakarta Indonesia](#)

Adika Zhulhi Arjana, Ninda Devita, Titis Nurmasitoh, Ika Fidianingsih, Miranti Dewi, Umatul Khoiriyah
Deficiency of vitamin D in the world is high. Vitamin D deficiency has numerous negative effects. The purpose of this study was to determine the proportion of vitamin D deficiency in male adolescents in Yogyakarta Indonesia. This research is a cross-sectional study. The height, weight, physical activity,...

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[Body Mass Index and Abdominal Circumference Towards Hypertension in Adolescent in A Senior High School of South Tangerang, Indonesia](#)

Sugiatmi, Munaya Fauziah

Hypertension is associated with the risk of cardiovascular disease, metabolic syndrome and central obesity. Hypertension that occurs in adolescence will continue into adulthood. This study aims to identify the incidence of hypertension in adolescents and its relationship with body mass index and abdominal...

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[The Determinants of Diphtheria Outbreak in Cirebon City](#)

Mohamad Rahman Suhendri, Pariawan Lutfi Ghazali

Background: Indonesia's Ministry of Health reported 3,944 cases of diphtheria that occurred between 2011 and 2017 with 142 deaths. One of the cities with a high number of diphtheria cases is Cirebon. This study aimed to determine the factors related to diphtheria outbreaks in Cirebon. Methods: This observational...

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[Effect of High-Fat Diet on Systolic Blood Pressure in STZ-Induced Diabetic Adolescent Sprague Dawley Rats](#)

Dini Islamiana, Intan Susmita Rafsanjani, Miranti Dewi Pramaningtyas, Ana Fauziyati

Hypertension and diabetes mellitus are two major contributing factors in cardiovascular disease development. Previous studies have shown that insulin resistance is worse in obese youth than adults. This research compared the effect of diabetes mellitus and high fat diet on systolic blood pressure between...

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[Correlation Between Renal Activity Index and C3 Complement Expression in Mouse Lupus Nephritis Model](#)

Nurhasan Agung Prabowo, Arief Nurudhin, Salma Asri Novia

Background: Lupus nephritis is a disease which currently has no definitive therapy. For lupus nephritis, histological examination remains the best option to assess the degree of disease activity, which is essential for therapy evaluation and monitoring. At present, there is no single laboratory that...

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[Neutrophil to Lymphocyte Ratio and Hs-CRP Predict Mortality in COVID-19 Patients](#)

Evi Nurhayatun, Nurhasan Agung Prabowo, Dhani Redhono Harioputro, Wachid Putranto, Dono Indarto, Bambang Purwanto

Background: Inflammation plays an important role in the pathogenesis of COVID-19 and can be an important factor in the prognosis. The innate immune response to a respiratory infection is characterised by an influx of neutrophils to the lungs, particularly the alveoli. A sustained release of anti-inflammatory...

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[Culex quinquefasciatus With the Highest MHD as a Potential Filariasis Vector in Demak, Central Java, Indonesia, a Filariasis Endemic Area](#)

Siti Istianah, Budi Mulyaningsih, Sitti Rahmah Umniyati

Filariasis is a communicable disease caused by nematode worms and transmitted by mosquitoes. It causes permanent elephantiasis which decreases productivity and carries a stigma. Filariasis becomes one of the health problems in Indonesia. The filariasis elimination program through preventive mass drug...

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[The Effectiveness of Endoscope Camera in Combination With Modified Standard Laryngoscope in Endotracheal Tube Installation](#)

Muhammad Yusuf Hisam, Tiar Ramadhan, Rahmita Adhalina

Background: Emergency is a critical condition which requires accuracy and speed of actions. Intubation is one of the most frequently performed actions in an emergency department. The success of intubation has a significant influence on the success of the emergency department. A number of factors affect...

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[Analysis of the Cesarean Section Unit Cost With the Time-Driven Activity-Based Costing Method: A Narrative Review](#)

Fahmy Abdul Haq, Firman Pribadi, Titiek Hidayati

It is necessary to think about a method of determining the cost of a cesarean section that is in accordance with the real conditions in a private hospital so that the hospital does not suffer losses. The research objective was to determine the method of calculating the unit cost of Caesarean section...

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[Primary School Student Online Video Competition Model to Improve Six Steps Handwashing Ability to Prevent Upper Tract Infection](#)

Titiek Hidayati, Suryanto

The prevalence of upper tract infection / ARI in primary schools is 15% in 2019. Currently, upper respiratory infections cause most students to be absent from school compared to other disease factors. One of the most important causes of ARI is hand hygiene; therefore, washing hands using soap is the...

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[The Decrease in Hospital Visits at Universitas Sebelas Maret Hospital Due to the Level of Stress and Fear of COVID 19](#)

Nurhasan Agung Prabowo, Hendrastutik Apriningsih, Paramasari Dirgahayu, Tonang Dwi Ardyanto, Muchtar Hanafi

Background: In the current COVID-19 pandemic, the number of hospital visits was significantly decreased. There was a decrease in the number of outpatient visits from 9911 patients in January to 5586 patients in May 2020 in UNS hospital. This study aims to know the association the level of stress, hospital...

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[Bronchiectasis as A Sequealae From COVID-19](#)

Hendrastutik Apriningsih, Nurhasan Agung Prabowo, Reviono, Tonang Dwi Ardyanto, Resta Farits Pradana

Background: Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-COV-2). Ground glass opacity, fibrous stripe, and thickening of adjacent pleura are frequently reported sequelae of COVID-19. COVID-19 causing severe bronchiectasis...

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[Abortion and Unmet Family Planning Needs: A Case Study in Java Provinces, Indonesia, 2020](#)

Lilieki Pratiwi, Harnanik Nawangsari

Background: Women with unmet contraceptive needs rarely say that they do not realize the importance of contraceptives since they typically do not have access to contraceptives sources or supply or the price is unaffordable for them. In most countries, married women who ever experience side effects from...

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[Analysis of Factors for Palliative Care for Breast Cancer Patients in Java in 2020](#)

Harnanik Nawangsari, Lilieki Pratiwi

This study pays attention to breast cancer patients in Java Province in 2020 because it aims to analyze factors related to palliative care, especially for patients with cervical cancer. So, it is hoped that this research will be useful as a suggestion for breast cancer patient health services. In this...

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[Hypoglycemic and Hypolipidemic Effects Red Rosella Flower Steeping on Diabetic Rats](#)

Ratna Indriawati, Vitis Vinivera, Tunjung Wibowo

Diabetes mellitus is a metabolic disease characterized by hyperglycemia and can cause dyslipidemia. One of the herbal plants that is thought to antidiabetic and hypolipidemic effects is the red rosella flower. This study aims to identify the capacity of hypoglycemic and hypolipidemic of red rosella flower...

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[Diabetic Foot Exercise, and Care to Prevent Mortality and Morbidity in Diabetes Mellitus Patients in Pandemic Covid-19 Era: Case Report](#)

Yuningtyaswari, Titi Hidayati, Ayunindya Adila

Non-pharmacological interventions that can be undertaken include a proper nutritional diet, regular physical exercise, and smoking cessation. Diet and regular exercise will change the glucose level of Type II Diabetes Mellitus sufferers to achieve standard metabolic control, normal HbA1c levels, and...

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[Case Series: Handling of Fertilization Program in the Cervical Polyp Case](#)

Ivanna Beru Brahmana

Pregnancy programs are carried out at the Obstetrics & Gynecology clinic with infertility causes in the form of cervical polyp around 10%. Provide a series of four cases of cervical polyps in pregnancy program patients. The first case occurred in primary infertile 1.5 years, P0A0 27 yo, with irregular...

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[Bukoini: Is There Any Correlation Between Anti-Glaucoma Eye Drop and Primary Glaucoma Patients Quality of Life in RSUD Kota Yogyakarta?](#)

Idiani Darmawati, Fisna Sinantia, Ameliza Kwartika

Introduction. The healthy eyes are the needs of every human being. If disorders are found in someone's eyes, their quality of life would be decreasing. One of diseases that might distract human's visual function is glaucoma. There are many factors which cause the decrease of glaucoma patient's quality...

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[Rural-Urban Differences in Characteristic and Lipid Profile Among Javanese Ethnic of Type 2 Diabetes Patients](#)

Yanuarita Tursinawati, Arum Kartikadewi, Ari Yuniastuti, R. Susanti

Background: Urbanization has led to changes in human health with the inception of non-communicable diseases such as Diabetes mellitus (DM). This is generally due to the adaptation to unhealthy and sedentary lifestyles, with poor diet patterns. The purpose of this research is to identify the rural and...

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[Kahoot! Application in Medical Education: Quality of Lectures Improvement](#)

Galuh Suryandari

Efforts to improve the quality of lectures with technology implementation are increasingly needed to overcome the problems of large-scale classes, one of them are Kahoot!. It aims measure and compare the improvement quality of lectures between the biomedical and clinical science groups on medical school...

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[Correlation of Age, Duration of Diabetes Mellitus, HbA1c Levels, and Erectile Dysfunctions in Type II Diabetes Mellitus](#)

Niken Widyaningsih, Dwi Nur Ahsani

Uncontrolled diabetes mellitus (DM) can cause erectile dysfunctions. A number of studies show that erectile dysfunctions (ED) are more common in a longer period of DM. Age and HbA1c levels are related to type II DM. This study aimed to reveal the correlation between age, duration of DM, HbA1c levels,...

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[Can Academic Potential Tests Predict Students' Learning Outcomes?](#)

S. Sundari, SW Putro, GA Sadrina

The Medical Education Study Program is a favorable department study program at Universitas Muhammadiyah Yogyakarta. Thus, the department increases the students' input standard to keep quality. There are various kinds of tests for selecting new students, including course tests, psychological tests (TPA...

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[The Evaluation of the Sensitivity and Specificity of Ultrasound Examination in Patients With Suspected Acute Appendicitis](#)

Ana Majdawati, I Gusti Ayu Putri Anom Sari

Background: Acute Appendicitis is inflammation of the appendix, which manifests as pain in the lower right abdomen that can develop into an acute abdomen. This situation can end in the emergency room and require immediate surgical treatment. Ultrasound is the initial choice most often used for the diagnosis...

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[One-Visit Apexification in Management of Gutta Percha Extrusion and Condensing Osteitis: 4 Years Follow-Up](#)

Rasda Diana, Andina Widyastuti, Pribadi Santosa

An overfilled root canal is the most common iatrogenic error in daily endodontic practice, especially on open apex tooth, which leads to chronic periapical inflammation and failure of endodontic therapy. With various materials and techniques available, the clinician must determine the ideal protocol...

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Identification of off-Label Indications Drug for Pregnant Women in A Public Hospital in Yogyakarta Indonesia

P Utami, N Maziyyah, I Cahyaningsih, B Rahajeng, W Hariyadi

Pregnant women have special characteristics in the use of drugs that require more attention in the administration of drugs. The use of drugs outside the information listed in the leaflet or “off-label” has a risk when used by special populations such as pregnant women. This study aims to determine the...

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The Effects of Antimicrobial Peptide Gel on Angiogenesis and Fibroblast Cells in Periodontal Tissue Regeneration in a Periodontitis Rats Model Exposed by Nicotine

Ika Andriani, Atiek Driana Rahmawati, Maulida Nurhasanah, M. Ihza Humanindito

Nicotine, a major component of tobacco, is a significant contributing factor for the exacerbation of periodontal diseases. Periodontitis, one of the periodontal diseases, leads to alveolar bone damage triggered by bacteria and exacerbated by nicotine exposure as mostly suffered by smokers. Periodontitis...

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Correlation Between Frequencies and Durations of Bottle-Feeding Towards Maxillary Dental Arch Size in 7-9-Year-Old Children

Atiek Driana Rahmawati, Eggi Arguni, Iwa Sutardjo Rus Sudarso, Dibyo Pramono

Bottle-feeding is one factor that affects the growth and development of the jaw in infants. It is a normal habit at a certain age. However, if there is prolonged bottle feeding, its frequency and duration can impact and interfere with jaw development. This study aims to establish the correlation between...

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Lumbar Epidural Analgesia: Shortening Time of Active Phase at First and Second Stage of Labor

Supriyatiningih, Iman Permana, Yossie Budi, Pramitha Esha

Introduction: Pain is a cause of dissatisfaction in labor. The use of lumbar epidural analgesia (LEA) in labor is widespread due to its benefits in terms of pain relief and the shortening of labor time. The study selected 50 consecutive primiparaous women in labor at Asri Medical Center. They were given...

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Alcoholic Beverage Consumption Behaviors Among Primary School Students

T Chotchai

In 1997, WHO reported that 25% of pre-adolescents used to drink alcohol worldwide. The purpose of this cross-sectional research was to explore the alcoholic beverage consumption (ABC) behaviors among 380 primary school students in Khon Kaen Province, Thailand. Data were collected by questionnaires and...

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Saliva Biofluid: Transmission Source and Potential Diagnostic Specimens for Covid-19 – A Review

Dian Yosi Arinawati

Covid-19 was first reported in Wuhan, China, due to the case of pneumonia. This virus spread through droplets from humans with or without symptoms. Angiotensin-converting enzyme 2 (ACE-2), the receptor for Covid-19, facilitates the viral spike (S) protein entry to the target cells. This virus is reported...

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[The Bombyx mori L., Nanofibroin Has Potential for Composite Filler Restoration](#)

Sartika Puspita, Amira Khamila Wahyu Ening, Dwi Aji Nugroho

Bombyx mori L. nanofibroin has potential as an organic filler composite restoration because it has excellent mechanical and functional strength. One of the main requirements of the restoration material is to have good mechanical strength to wear resistance of dental restorations as well as tooth wear...

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[Caries Risk Assessment in Students With Disabilities](#)

Alfini Octavia, Trinita Lydianna, Dessy Audira, Chairunnisa Istiqomah

Background. Dental caries is the sixth-highest health problem in Indonesia. This condition has a negative impact on the quality of life of people. Therefore, we need to reduce caries by identified the risk of caries. Most of the children with disabilities have a dependency on people surrounding them,...

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[Bicuspidization of Necrosis Mandibular Second Molar With Grade II Furcation Involvement](#)

A Case Report

Maharatih Tiwi Sandjoko, Kurnia Fitrieningtyas, Margareta Rinastiti, Raphael Tri Endra Untara

Innovations in dental science and the higher patient expectations that appear when the periodontal disease affects the furcation area have led to a more conservative treatment approach to save teeth.

Bicuspidization is a surgical procedure performed to separate the mesial and distal roots of molars with...

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[Hemisection as an Alternative Management for Mandibular First Molar With Bifurcation Lesion and Root Fracture: A Case Report](#)

Fauziah Karimah, Eva Rizki Hutami, Tunjung Nugraheni, Ema Mulyawati

Modern advances in dentistry have provided the opportunity for patients to maintain a functional dentition for lifetime. Hemisection is a conservative way of preserving tooth. This procedure is an endodontic treatment performed by removing of the one or more roots and existing crown structure to increase...

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[Non-Surgical Management of Iatrogenic Perforation in Mandibular Molar Using Mineral Trioxide Aggregate Followed by Composite Onlay: A Case Report](#)

Henytaria Fajrianti, H.K. Adi Nugroho, Yulita Kristanti, Diatri Nari Ratih

One of the most common iatrogenic during endodontic is a perforation, especially furcation perforation on the molar. Perforation creates an artificial communication between a root canal and periodontal tissue, which could lead to pulpal inflammation extends to the periodontium. Management of perforation...

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[Aesthetic Treatment of Traumatized Anterior Teeth: A Case Report](#)

Nathania Pramudita, Fransisca Debby Rosalia, Yulita Kristanti, Diatri Nari Ratih

The emergency of a traumatically injured oral and maxillofacial region occurs frequently, and such injuries certainly need dental treatment. Therapy of traumatic dental injury aims to restore the function of the tooth; Towards this goal dentists will need a carefully managed treatment planning that often...

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Health Literacy Among Patients With Stage 2 Hypertension: A Survey in Rural Yogyakarta

Riana Rahmawati, Jasmien Aisya Sastiarini, Dhiyaulhaq 'Aqilatul Fadhilah Hakim

Stage 2 hypertension is a major risk factor for cardiovascular events and should be treated adequately.

Despite the importance of patient health literacy in hypertension management, data from patients living in rural areas are lacking. Objective: This study aimed to measure health literacy levels among...

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Diagnostic Test of Chest Radiograph on Fungal Pneumoniae

Ana Majdawati, Inayati

Fungal pneumoniae is lung infection caused by fungi in which clinical manifestations are not typical,

even asymptomatic. Fungal pneumonia prevalences are 68.3% in both lung tuberculosis and non-

tuberculosis. Fungal pneumoniae is often undiagnosed early but later or late diagnosed and it make fails or...

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The Correlation Between Mineral Levels and Bone Loss Risk in Postmenopausal Women

Suryanto, Suci Aprilia

Background: Calcium and phosphate are two minerals that are important for bone formation. Osteoblasts indirectly regulate osteoclast resorption activity under the influence of estrogen. Estrogen itself produces growth factors and contributes to bone formation so that bone mineral density decreases with...

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Challenge in Propolis Biocompatibility as a Potential Medicament in Dental Medicine

A Literature Review

Fatma Nur Aini, Arya Adiningrat

The application of natural materials in biomedicine has developed quite rapidly. Nowadays, such materials' therapeutic properties become a diminishing topic, including the use of bee products. Bees produce several useful products, one of which is propolis. Propolis or "bee glue" is a honeybee product...

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The Differentiation of Triple Junction Telescopic Tube Space Maintainer From Space Maintainer Type I to Increase Intermolar With Premature Loss of Children

Laelia Dwi Anggraini, Sunarno, Rinaldi Budi Utomo, Dibyo Pramono

Background: Dental caries may lead to premature loss of the deciduous tooth. If it is left untreated it will lead to abnormal occlusion in children. The appliance used for preventive orthodontic is a space maintainer (SM). The existing appliance is rigid so far and does not follow the jaw growth. Thus,...

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[The Effect of Novamin on Surface Roughness Dental Enamel After Debonding Orthodontic Bracket](#)

Tita Ratya Utari, Bayu Ananda Paryontri, Aini Muzayyana

The acid etching process is required in orthodontic when attaching brackets to the enamel. It will result in microporosity so that the adhesive material enters the structure, and micromechanical retention occurs, which increases the adhesion strength. However, this process causes roughness and hydroxyapatite...

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[The Effects of Monday Thursday Fasting on Blood Pressure and Oral Hygiene Level on Clinical Dental Profession Student](#)

Erlina Sih Mahanani, Dinda Triani Ahyati, Hana Aulia Hapsari

Fasting has many health benefits for the human body as there is a detoxification process or release of toxic substances in the bod. One of the benefits are on blood pressure and oral hygiene. This research aims to identify the difference of blood pressure and oral hygiene level between clinical dental...

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[Steroid Inhaler Therapy and Oral Manifestation Similar to Median Rhomboid Glossitis \(Case Report\)](#)

Dwi Suhartiningtyas, Syifa Nabila Farah Fauziah Nur

One of the oral manifestations in the use of a steroid inhaler is Median Rhomboid Glossitis (MRG). It is a benign condition that is asymptomatic and appears as central papillary atrophy of the tongue. This case report presents the use of a steroid inhaler in an asthma patient with manifestation in the...

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[Tensile Strength and Microscopic Adhesion Observation of Dental Composite Restorative Material Manufactured From Sisal Nanofiber as Filler](#)

Dwi Aji Nugroho, Widjijono, Nuryono, Widya Asmara, Aulia Rahmasari, Ensa Dyota

Background: Dental Composite consists of inorganic filler material that does not have chemical adhesion to organic materials. Tooth structure and adhesive materials contained many organic materials. Inorganic fillers could be substituted by organic material. This material was sisal fiber. These fibers...

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[Lumbar Epidural Analgesia as a New Paradigm: Views of Women in Rural and Urban Community in Yogyakarta](#)

Iman Permana, Supriyatiningasih, Pramitha Esha Nirmala Dewi

Pain in labor has been problematic for women regardless their socio-economic status. Lumbar Epidural Analgesia (LEA) was suggested to provide high-quality pain relief and minimizing side-effects both for maternal and the fetus or on the outcome of labour. The aim of this study was to explore the awareness...

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[Complex Esthetics and Endodontic Treatment With Porcelain Fused to Metal Crown Supported by Fiber Post and Smart Dentin Replacement as a Core for Anterior Upper Maxilla](#)

Erma Sofiani

Background. Restoration of endodontically treated tooth may bring more risks of fracture than a vital tooth. The decision making should be taken based on clinical appearance and consideration. This case

report informed crown restoration with fiber post and Smart Dentin Replacement after root canal treatment...

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Acrylic Based Individual Ocular Prosthesis

A Case Report

Fahma Kunsputri, Haryo Dipoyono, Endang Wahyuningtyas

Background: Ocular defects due to eye enucleation may affect patient psychologically. Individual ocular prosthesis have several advantages compared to stock ocular prosthesis. Acrylic based is one of the most used individual ocular prosthesis. Objective: To describe a simple method of fabricating ocular...

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Oral Health-Related Quality of Life and Dental Caries Status Among Elderly People in Bantul Yogyakarta Indonesia: A Cross-Sectional Study

Sri Utami, Yulianti

One of the indicators of poor oral health in older people is dental caries. Dental caries affects quality of life consisting physical, functional, social, and emotional welfare throughout each individual's life. This study aims to determine the correlation between dental caries status and quality of...

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Salivary Calprotectin in Patient With Oral Candidiasis

Afryla Femilian

Calprotectin, a calcium and zinc-binding protein found in non-keratin squamous epithelial membranes, is a cytosolic protein produced by neutrophils and monocytes, which can be found in serum plasma, urine, saliva and other body fluids. Calprotectin has antifungal activity by inhibiting yeast development...

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The Odontogenic Keratocyst Detected Accidentally With Radiological Features

Erwin Setyawan

Odontogenic Keratocyst (OKC) usually appears asymptotically; thus, it is likely to be found incidentally. World Health Organization (WHO) classifies OKC into tumors as they have similar characteristics. Although it is classified as a non-malignant tumor, odontogenic keratocyst can occur repeatedly....

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Relationship Between Body Image and Eating Pattern in Woman Adolescents

Agus Sarwo Prayogi, Ulya Maulida, Induniasih, Ana Ratnawati, Abdul Majid, Harmilah

Adolescence there is concern for body weight and body shape. This encourages teenagers to go on a diet. A good eat pattern needs to be established in an effort to meet nutritional needs. Body image in adolescents will greatly affect their diet including the selection of food ingredients and the frequency...

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Adaptive Response of Colorectal Cancer Patients With Stomas on Quality of Life and Body Images: A Literature Review

Agus Suparno, Fitri Arofiati

Each year, approximately 1.8 million people develop colorectal cancer [CRC], the third most frequently diagnosed cancer [10.2% of total cases] among both sexes globally. Changes occur in food patterns, clothing, social life, body image and irritation in the stoma area. The condition of being a person...

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Evaluation of Potential Drug-Drug Interactions in Hypercholesterolemia Patients at Teaching Hospital Surabaya

Ana Khusnul Faizah, Nani Wijayanti Dyah Nurrahman

Drug-drug interactions increase the effectiveness of therapy but can also have undesirable effects on toxicity. A pharmacist has the responsibility to prevent the undesirable effect of drug-drug interactions. The purpose of this study was to evaluate the potential drug-drug interactions in hypercholesterolemia...

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Pharmaceutical Storage Evaluation in Warehouse and Outlet of Apotek X Bantul Yogyakarta in 2018

Andy Eko Wibowo, Widya Putri Lestari

The management of pharmaceutical preparations is a very important part of a pharmacy, because it is the main source of income, wrong or inefficient storage of drugs can cause drugs to expire, the number of dead stocks and drug rotation is not optimal. Errors in storage can make a drug become damaged...

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Formulation and Antioxidant Activity of Serum Gel of Ethyl Acetate Fraction From *Musa x paradisiaca* L.

Arini Syarifah, Arif Budiman, Siti Atun Nazilah

One of the plants that had potential as a natural antioxidant was raja banana skin. The fraction of ethyl acetate of raja banana skin (*Musa x paradisiaca* L.) had antioxidant activity (IC50) with value 50.25 ppm. The fraction of ethyl acetate of raja banana skin will be formulated into serum gel. This...

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Nurses' Role in Discharge Preparation for Acute Coronary Syndrome Patients

Azizah Khoiriyati, Kusananto Kusananto, Ninuk Dian Kurniawati

Introduction: Patients with post hospitalized heart attack often feel insufficiently ready for the hospital to home transition. Problem focused on patients and health care providers can contribute to the significant residual risk seen in patients with acute coronary syndrome. Therefore, nurses could...

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Effects of Anti Tuberculosis Side Effect on the Quality of Life of Tuberculosis Patients in RSKP Respira Yogyakarta at the Period of January-June 2019

Bangunawati Rahajeng, Nabila Shafira, Pinasti Utami

The emergence of side effects in the use of anti-tuberculosis drugs is reported to disrupt daily activities; thus, it can affect the quality of life of TB patients. This study aims to determine the relationship between the side effects of anti-tuberculosis drugs and TB patients' quality of life. This...

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Risperidone Induced Xerosis and Tachycardia in Schizophrenia Patients: A Case Report

Bangunawati Rahajeng, Pinasti Utami, Astrit Ikafitriani

Background: Risperidone is one of the atypical antipsychotics usually used in schizophrenia therapy. Like most antipsychotics, risperidone has several side effects. Xerosis and tachycardia are rare side effects of Risperidone with incidence <1%. However unfortunately, the numbers of case reports about...

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[Application of Pain Scale Assessment in Patients Attached Mechanical Ventilator in Intensive Care Unit](#)

Barkah Waladani, Isma Yuniar, Endah Setianingsih, Naura Nazhifah Rahmah, Indah Yunita
Special equipment in Intensive Care Unit such as the installation of mechanical ventilation causes the patient to be unable to express the condition he feels, one of which is pain. This study aims to determine the suitability of pain assessment using Critical Pain Observation Tool (CPOT) and Non Verbal...

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[Formulation of Body Scrub Cream From Extract of Arabika Green Coffee \(Coffea arabica L.\) as Antioxidant](#)

Damayanti Hilda, Aprilliani Arini, Clarissa D. Nancy

Arabica green coffee beans (Coffea arabica L.) have many chemical contents in the seeds, namely tannins, alkaloids, flavonoids, coumarin and quinones. Arabica green coffee beans also have antioxidant activity because they have polyphenols. Oil cream in water is very preferred for topical use because...

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[Heavy Metal Analysis on Blush on Online Selling by Atomic Absorption Spectrophotometry Method \(AAS\)](#)

Diana Sylvia, Dini Lanjar Sari, Nita Rusdiana

Cosmetics are a daily human need. The number of cosmetics on the market is thought to contain hazardous or toxic substances, one of which is heavy metals. Based on BPOM RI Regulation Number Hk.03.1.23.07.11.6662 Year 2011 Regarding the requirements for heavy metals in cosmetics, the very limit for Pb...

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[Measuring Self-Care and Diabetes Distress Among Diabetic Patients](#)

Dwi Prihatiningsih, Agustina Rahmawati

Impact of diabetes distress on diabetes self-care practices have been widely investigated but little known about the implication of the diabetes self-care on diabetic distress. This study is a correlational study that aims to discover the prevalence of distress and its correlation with self-care behavior...

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[Formula Optimization of Antimicrobial Hand Sanitizer With Lemongrass Essential Oil](#)

Dyani Primasari Sukamdi, Muhammad Fariez Kurniawan, Vella Laili Damarwati

During the covid-19 pandemics, the government required people to comply with health protocols. Some health protocol demands are such as using masks and maintaining personal sanitation independently. The application of sanitation and hygiene aims to protect the public from the covid-19 virus. Independently,...

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[Women's Empowerment and Infant and Young Child Feeding Practice in Low- and Middle-Income Countries: A Systematic Review](#)

Eka Mishbahatul Mar'ah Has, Nursalam Nursalam, Yuni Sufyanti Arief

Adherence to the WHO guidelines for infant and young child feeding (IYCF) practice in low- and middle-income countries (LMIC) is unsatisfactory. Women's empowerment has been noticed as the key factor which mediating intra-household resources to achieve optimal IYCF practice. Thus, we undertook a systematic...

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[Al-Qur'an Murottal Therapy to Reduce Cardiovascular Reactivity to Handgrip in Hypertensive Pre-Elderly Subjects](#)

Elly Trisnawati, F'annah Al Azizah, Ikhlas Muhammad Jenie

Cardiovascular reactivity is a response of the cardiovascular system when it reacts to physical stress or psychological stress that can affect hemodynamics. Murottal therapy as a complementary treatment to lower high blood pressure and it is an efficient therapy that can be easily done by every individual...

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[The Review of Patients' Quality of Life With Chronic Kidney Failure](#)

Endang Sunariyanti, Restu Nur Hasanah Haris, Trisna Lestari, Nur'aini, Sefi Megawati

Chronic kidney failure is a disease with a global prevalence of height. The high incidence of chronic kidney failure requires special care to improve the quality of life is the state where a person feels comfortable and satisfied in everyday life, including physical, emotional, social and spiritual functions....

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[Anxiety, Depression, and Coping Mechanism Among Outpatients With Heart Failure](#)

Fanni Okviasanti, Ah. Yusuf, Ninuk Dian Kurniawati

Anxiety and depression have been identified as common condition experienced by patients with heart failure (HF). Some HF patients who are unable to manage their anxiety and depression show poor coping mechanism. The aim of this study was to identify the correlation between anxiety, depression, and coping...

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[Community Nurses' Knowledge, Attitude, and Practice Towards Child's Growth and Development Promotion Program in the Community Health Care Center](#)

Ferika Indarwati, Khoirunnisa Miyono, Andri Putriasi, Siska Manunggar, Nisa Hasanah

Promoting child growth and development is one of the Indonesian community health center's priority programs. Children's growth and development at early ages play a crucial role in defining children's future health trajectories. This study aims to describe community nurses' knowledge, attitude, and practice...

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[The Correlation Between Pregnant Women Knowledge Level, Perception, and Compliance With Ferrous Fumarate Tablet Consumption in a Primary Health Care Institution](#)

Ginanjar Zukhruf Saputri, Susan Fitria Candradewi, Ana Hidayati, Diar Winarti

Anemia in pregnancy is one of the causes of death in pregnant women. Approximately, 41.8% of anemia cases occurred in pregnant women, with the highest prevalence rate of 61.3% in the African region and 52.5% in the Asian region. WHO states that 58% of anemia in pregnancy is caused by iron deficiency....

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[Optimization of Gold Nanoparticles and Molecular Beacon Probe for DNA Detection by Colorimetric Method](#)

Hari Widada, Mar'atus Sholikhah, Sabtanti Harimurti, Dyani Primasari Sukamdi, Abdul Rohman, Riris Istighfari Jenie, Sismindari

Gold nanoparticles are platforms that can be immobilized with a probe; thus, they can be used as biosensors. In the health sector, biosensors are utilized for biomedical applications, such as for DNA marking and cell isolation. In addition, it can be used as a method for Halal Authentication applications...

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[The Relationship of Smoking Habits, Cholesterol Level and Diabetes Mellitus \(DM\) History With Stroke Incidence in Patients at PKU Muhammadiyah Hospital Sruweng](#)

Hendri Tamara Yuda, Asri Munajah, Podo Yuwono

Stroke is a health problem that attacks the neurological system. It may result in brain damage, paralysis and even death. Hypertension, smoking, Diabetes Mellitus, heart diseases, blood cholesterol levels, alcohol, and drug abuse are some of the risk factors that can be changed. The total outpatient...

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[The Potential Effect of Citrus Sinensis Extract on Malondialdehyde \(MDA\) Levels in Rat Induced by Cigarette Smoke](#)

Ika Setyawati, Nunki Indah Hidayati

Cigarette smoke contains numerous substances containing free radicals and can prompt oxidative pressure. The buildup of free radicals cannot be neutralized by antioxidants for essential cancer prevention agent supplements from outside. In relation to that, the peel of citrus sinensis is expected to contain...

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[Factors Affecting Blood Glucose Stability in Type 2 Diabetes Mellitus Patients](#)

Indah Wulandari, Kusnanto Kusnanto, Sony Wibisono, Bella Andriani, Andri Restu Wardani, Sela Anugrah Huri

Blood glucose stability is important for type 2 diabetes mellitus patients in order to reduce the risk of co-morbidity due to diabetes mellitus. The stability of blood glucose levels in patients with diabetes mellitus was influenced by several factors such as age, sex, duration of illness, race, diabetes...

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[An Analysis of Health Workers' Quality of Life in Indonesia During COVID-19 Pandemic](#)

Ingenida Hadning, N. Qurrotu' Ainii

Pandemic of Coronavirus Disease 2019 (COVID-19) has an impact on the life quality of health workers as the frontline in handling COVID-19 patients. This study aims to determine health workers' quality of life during the COVID-19 pandemic. This study was conducted in a observation with cross sectional...

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[The Effectivities of Yoga Gymnastic to Decrease the Level of Postpartum Blues Incidence](#)

Kusumastuti, Hastin Ika Indriyastuti, Lutfia Uli Na'mah

Postpartum blues in postpartum mothers are often neglected and ignored so they are not diagnosed and are not cared for properly. If the postpartum blues cannot be recovered, this situation will be developing into postpartum depression and even postpartum psychosis. The rate of postpartum blues incidents...

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[The Relationship Between Family's Affective Functions and Cyberbullying in Adolescents](#)

Laili Nur Hidayati, Rizki Afita Oktafianti

Excessive use of the internet in adolescents can raise the risk of violence in cyberspace (cyberbullying). The impact of cyberbullying can range from depression to suicide and can reduce achievement levels at school. Adolescents who commit cyberbullying are caused by a lack of communication and affection...

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[In Vitro Study of *Kaempferia galanga* L. Compound, \$\delta\$ -3-Carene, Against 5-Lipoxygenase](#)

Lusi Putri Dwita, Supandi, Yeni

Kaempferia galanga has anti-inflammatory activity and worth developing as lipoxygenase inhibitors. The aim of this study was to determined δ -3-carene, one of the potential compounds of *K. galanga*, as a lipoxygenase inhibitor. The LOX-inhibitor activity was tested in-vitro. The result showed that the...

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[Ergogenic Activities of Some Plants of Family Araliaceae on *Mus musculus*](#)

M. Artabah Muchlisin, Firasti Agung Nugrahening Sumadi, Angga Wahyu Hidayat, Nehru Marino Awal, Ahmad Shobrun Jamil

Ergogenic is defined as the equipment, techniques and substances used to enhance sports performance. Ergogenic aid is classified into various forms, such as nutritional, pharmacological and physiological. One of the most well-known natural ingredients as an ergogenic substance is ginseng (*Panax ginseng*)....

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[Drug Use in Systemic Lupus Erythematosus \(SLE\) Outpatients](#)

Maria Caecilia N. Setiawati, Ika Puspitaningrum, Nyoman Kertia

The Systemic Lupus Erythematosus (SLE) is an autoimmune disease, affecting most of the patients' organ systems. The disease is considered to be a chronic disease and its effect makes unpredictable flares. According to Yayasan Lupus Indonesia (YLI), in this decade, the total amount of SLE patients is...

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[The Impact of Smoking on the Therapy Outcomes in Patients With Pneumonia Infection at RSP \(Pulmonary Hospital\) Respira, Yogyakarta](#)

Mega Octavia, N.D Pramitha Esha, Dianita Sugiyo

Smoking is known to cause interstitial lung diseases, such as interstitial pneumonia and the prognosis, which are well seen when patients quit smoking. Smoking cigarette negatively affects the effectiveness of therapy, cure rates, and a higher risk of recurrence in pulmonary TB. This study analyzes smoking...

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[Variation of CYP2C9 Gene and Glycemic Control in Diabetic Patients: A Literature Review](#)

Nidaul Makwa, Dyah A Perwitasari, Imaniar N Faridah, Lalu M Irham, Haafizah Dania, Rita Maliza
The prevalence of Diabetes Mellitus Type 2 (DMT2) is continuing to increase worldwide. The variety of responses to the oral antidiabetic is influenced by several factors, including genetics, physiology, pathophysiology and the environment. Genetic factors are estimated to contribute 15–30% to differences...

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[The Effect of Qigong Exercise on the Teacher's Work Stress Level](#)

Nina Dwi Lestari, Winda Setyadewi

Teachers are a population at risk of experiencing work stress due to excessive workloads. This condition requires management so that it does not affect work productivity and health. This study aims to identify the effect of qigong exercise on the teacher's work stress level. This research method is Pre-Experimental...

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[Determination of Methampyrone Levels Using Thin Layer Chromatography and UV Spectrophotometry Method in Gout Herbal Medicine](#)

Nita Rusdiana, Diana Kartika Wulansari, Diana Sylvia

Based on data from the National Food and Drug Administration, there are 46 withdrawals of herbal products on the market because they contain hazardous chemicals such as MTP, phenylbutazone, dexamethasone, allopurinol, CTM, sildenafil citrate, tadalafil, and paracetamol. MTP is one of the analgesic-antipyretic...

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[The Influence of Family Support on Self Efficacy of Chronic Kidney Disease](#)

Nur Isnaini, Risang Sukma, Happy Dwi Aprilina

Introduction: Patients with chronic kidney disease must be able to undergo hemodialysis therapy, medication, fluid restriction, and diet. Self-efficacy of patients is needed so that all therapies can work well. Besides, family support is no less important so that patients are confident and able to undergo...

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[Macronutrients Analysis of Porang Tubers \(*Amorphophallus muelleri* Blume\) Fermentation With *Lactobacillus Bulgaricus* Bacteria](#)

Nur'aini, Intan Wulan Dari, Abdul Aziz Setiawan, Dian Ratih Laksmiawati

Indonesia has various types of tubers offered to be developed, one of which is porang tuber (*Amorphophallus muelleri* Blume). *Amorphophallus muelleri* Blume has macronutrient content. Macronutrients consist of carbohydrates, starches, fiber, glucomannan, protein, and lipid. Porang tubers have higher glucomannan...

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[Prospective Study: Study of Asthma Therapy and the Relationship Between Asthma Control Levels and Quality of Life of Asthma Patients](#)

Pinasti Utami, Bangunawati Rahajeng, Razmi Wulan Diastuti, M.T Ghozali, Ingenida Hadning, Nurul Maziyyah, Indriastuti Cahyaningsih, Salmah Orbayinah

Asthma treatment generally aims to control asthma recurrence so that patients can lead an everyday life with few or no symptoms. In addition, low levels of asthma control are associated with a decreased meaning of quality of life. Therefore, this research aims to determine the study of asthma therapy...

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[The Relationship of Nutritional Status and Perineal Wound Healing Among Post-Partum Women](#)

Pipit Festy, Yuanita Wulandari, Maghfiratus Syawaliyah

Postpartum mothers with a history of episiotomy during vaginal delivery are prone to perineal wound infections. Nutritional status has an important role in the process of wound healing. The purpose of this study was to determine the relationship of nutritional status with the process of healing perineal...

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[Analysis of Essential Oils Utilization in Enhancing Immune Systems in the Pandemic Era](#)

Puspawan Hariadi, Hartini Haritani, Yuyun Febriani, Abdul Rahim, Tri Puspita Yuliana, Ersi Arviana Ikhsan

In December 2019, a new virus strain of coronavirus-SARS-CoV-2 (COVID-19) has been reported. One prevention that can be done is to increase immune systems by using essential oils. This study aims to analyze the essential oils used during a pandemic. A Qualitative descriptive method with a random sampling...

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[Nurse's Knowledge and Accuracy in Using Comfort Scale](#)

Putra Agina Widwaswara Suwaryo, Juliyanto, Endah Setianingsih

More than 30% of critical patients have significant pain while resting and more than 50% of patients experience significant pain during the routine care process. Pain is difficult to measure and treat in patients with reduced awareness because direct reports from patients are important in the assessment...

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[Factors Affecting Antibacterial and Antifungal Properties of Microemulsion Gel containing Tea Tree Oil](#)

Raditya Weka Nugraheni, Uswatun Chasanah, Mohammad Dzulkipli Maulana, Miftakhur Ridha Ayyunaini, Umma Istiqomah Dwiputri, Rizki Ayu Firnanda

Tea tree oil (*Melaleuca alternifolia*) has been acknowledged for its antibacterial and antifungal properties. Previous publications revealed that the tea tree oil has antibacterial activity against *Propionibacterium acnes*, which is the leading cause of acne, *Staphylococcus aureus* that caused various skin...

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[Chemopreventive Activity of *Clinacanthus nutans* L. Ethyl Acetate Fraction on Breast Cancer Cells Line](#)

Rifki Febriansah, Isna Aura Dewayanti

Cancer is a non-communicable disease, the second largest cause of death in the world. In Indonesia, breast cancer is the most common type of cancer suffered by women with 22,692 deaths case. However, chemotherapy drugs work non-selectively as it they are against both cancer cells and normal cells, which...

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[How to Prepare a School Based Disaster Preparedness in Indonesia](#)

Satriya Pranata, Sri Widodo, Aric Vranada, Machmudah, Mariyam Mariyam

Indonesia is located along the Pacific Ring of Fire and close to some natural hazards, including earthquakes, tsunamis, volcanic eruptions, flooding, and droughts. BNPB (the National Agency for Disaster Management) recorded 436 deaths, 1353 mild injuries, 783 serious injuries, and 77,975 houses also,...

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[Effectiveness of Anting-Anting Leaves \(*Acalypha indica* L.\) in Reducing Uric Acid Levels in Hyperuricemic Male White Rats \(*Rattus norvegicus*\)](#)

Sefi Megawati, Saru Noliqo Rangkuti, Sagita Novianti

Hyperuricemia is an elevated level of uric acid in the blood that induces uric acid needle shaped crystals saturation resulting in joint stiffness. Anting-anting leaf contains quercetin and kaempferol which are capable of decreasing uric acid in the body. The purpose of this study was to determine the...

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[Efficacy of Islamic Wet Cupping Therapy on Vital Sign in Lunar Phase: A Comparative Study Between Sunnah and Non-sunnah Dates](#)

Syahruramdhani Syahruramdhani, Nurvita Risdiana, Aris Setyawan

Introduction: Cupping therapy is a skin vacuuming method for releasing accumulated toxins and oxidants in the body. Cupping therapy is believed as a treatment for several diseases such as hypertension, migraine, carpal tunnel syndrome, and it also takes part in stroke rehabilitation treatment. Based...

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[Smoking Behavior on Health Workers in Indonesia: A Phenomenological Study](#)

Titih Huriah, Arif Rahman

Smoking behavior is a global health threat. Indonesia ranks third after China and India, with the most significant number of smoking behaviors in the world. Indonesia has implemented a No Smoking Area policy in the workplace and health facilities, but its implementation in the field is still not consistently...

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[Affinity of Compounds in *Hemigraphis Alternata* \(Burm.F.\) T. Ander Leaves to Cyclooxygenase 1 \(COX-1\): In Silico Approach](#)

Yeni Yeni, Rizky Arcinthy Rachmania, Dicky Yanuar M R Mochamad

Inflammation is an important biological process for eradicating pathogens and maintaining tissue homeostasis. Cyclooxygenase 1 (COX-1) is one of the pharmacological targets for anti-inflammatory drugs. The purposes of this study was to predict the affinity of 23 compounds contained in *Hemigraphis alternata*...

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[The Preventive Behavior of Green Tobacco Sickness \(GTS\) Syndrome at Tobacco Farmers: The Role of Health Literacy](#)

Dewi Rokmah, Khoiron, Imas Imama, Nita Indah Lestari, Ahmad Aviv Mahda, Icha Rohmah Damayanti Agustin

The purpose of this study was to analyze the correlation between duration of work, smoking status, and knowledge of GTS, and personal hygiene with GTS, status of tobacco farmers, as well as education, knowledge of GTS, income and GTS status of tobacco farmers with health literacy. This research used...

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[Mental Emotional Disorders in the Community](#)

Warih Andan Puspitosari, Shanti Wardaningsih

According to Indonesia Basic Health Research 2018, the prevalence of mental emotional disorders which is indicated by depression and anxiety symptoms reached 9.8% of the total households in Indonesia.

Screening of mental emotional disorders in a population at risk needs to be done. Therefore, people...

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[Effect of Compression Bandage on the Healing of Diabetic Foot Ulcers: A Scoping Review](#)

Asmat Burhan, Fitri Arofiati

Compression Therapy is a non-invasive application in the treatment of leg wounds. Bandage that is not done will cause lower leg edema when the swollen exudate is retained on the surface of the wound which will result in maceration of the skin around the wound, in cases of venous blood vessels there is...

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[The Influence of Progressive Mobilization on Pneumonia and Decubitus Occurrences in Critical Patients Using Mechanical Ventilator](#)

A Literature Review

Hanny R. Mokorimban, Nur Chayati

Background: The short-term impact felt by critically ill patients and ventilators are Ventilator-Associated Pneumonia (VAP), which is added to the health mechanism due to muscle weakness and the occurrence of pressure sores or decubitus. Prevention of pneumonia in intubation patients is crucial because...

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[The Effectiveness of E-Learning in Dealing With Psychiatric Problems for Doctors and Nurses in Primary Care Facilities: A Literature Review](#)

Shanti Wardaningsih, Warih Andan Puspitosari, Asroni

Handling of psychiatric cases in the community and at the healthcare center is a vital aspect for further treatment of people with mental health disorders. Hence, healthcare workers (doctors and nurses) are required to carry out this crucial intervention with their professional expertise properly. The...

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[E-emsy Development in the Implementation of Psychiatric Emergency Training for Nurses and Doctors](#)

Asroni, Lazuardi Fatahilah Hamdi, Shanti Wardaningsih, Warih Andan Puspitosari

The use of e-learning as an internal training medium for medical personnel in Bantul Regency has not been implemented by the hospital as an effort to develop human resources, especially for handling psychiatric emergencies. Since 2016, Bantul Regency was in the top rank in Indonesia for its number of...

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[The Effectiveness of Remdesivir versus Ruxolitinib as Covid-19 Supportive Management: Systematic Review, Meta-Analysis](#)

Nuriyatul Fhatonah, Ma'sum, Zenith Putri Dewianti, Nur'aini, Nita Rusdiana

The treatment regimen in severe Covid-19 patients has several types of therapies. However, there is uncertainty about which therapies are more effective in the covid-19 weight category. In June 2020, the study was conducted with keyword search [REMDESIVIR] [RUXOLITINIB] [COVID19] in 2010-2020 using PUBMED.gov....

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[Effects of Active Learning and FGD Education Methods on the DAGUSIBU Knowledge of MA Nurul Ummah Students, Yogyakarta](#)

Susan Fitria Candradewi, Ginanjar Zukhruf Saputri, Dwi Sundari, Iska Azkah Azizah

A research on drugs administration in Manado in 2014 revealed that 44.77% of the local population did not procure drugs properly, 75.9% received the wrong ones, 25.3% did not store them as suggested, and 72% did not use them appropriately. As an attempt to avoid medication management mistakes in the...

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[The Relationship Between Climate Factors and Dengue Hemorrhagic Fever Incidence in Sleman, Yogyakarta](#)

Tri Wulandari Kesetyaningsih, Reza Arief Fauzan

Dengue hemorrhagic fever (DHF) is a viral disease that is endemic in tropical and subtropical regions. It is spread through the bite of the Aedes mosquito. One of the factors influencing the spread of DHF is climate, which influences both vector and virus activity. The climate of a region is influenced...

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[Hypoglycemic Effect of *Moringa oleifera* Aqueous Extract in Diabetic Animal Studies: A Mechanisms Review](#)

Dhigna Luthfiyani Citra Pradana, Eldiza Puji Rahmi, Annisa Farida Muti

Diabetes is a chronic hyperglycemic condition which the therapy by maintaining blood glucose levels. Herbal plants can be an alternative therapy in reducing blood glucose levels. Indonesia is rich in herbaceous plants, one of which is *Moringa oleifera* Lam. Herbal plant of *Moringa oleifera* Lam. has been...

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[The Effect of *Moringa Oleifera* Leaf Extract on Mean Platelet Volume and Neutrophil-to-Lymphocyte Ratio in Autoimmune Patients](#)

Nurhasan Agung Prabowo, Arief Nurudhin, Ayuningdyah Chitra Buanantri

Background: *Moringa oleifera* is one of the promising novel treatments in autoimmune diseases through anti-inflammation and immunosuppression. Mean platelet volume and neutrophil-to-lymphocyte ratio are used to measure the degree of inflammation. This study aimed to identify the effect of *Moringa oleifera*...

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Affinity of Compounds in *Hemigraphis Alternata* (Burm.F.) T. Ander Leaves to Cyclooxygenase 1 (COX-1): In Silico Approach

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ABSTRACT

Inflammation is an important biological process for eradicating pathogens and maintaining tissue homeostasis. Cyclooxygenase 1 (COX-1) is one of the pharmacological targets for anti-inflammatory drugs. The purposes of this study was to predict the affinity of 23 compounds contained in *Hemigraphis alternata* leaves in inhibiting COX-1. The compounds of *Hemigraphis alternata* leaves were screened for its affinity towards COX-1 using docking software, DOCK 6.9, with aspirin as the reference. Based on the Grid score, the greatest binding affinity is referred to 3,7,11,15-tetramethyl-2-hexadecen-1-ol. It is better than affinity of aspirin to COX-1. The study showed that *Hemigraphis alternata* leaves contain potential active components that could be developed as COX-1-inhibitor.

Keywords: *Hemigraphis alternata*, Cyclooxygenase 1, In silico.

1. INTRODUCTION

Inflammation is a pathophysiological response to infection or tissue damage [1]. The biological process is important for pathogen eradication and maintenance of tissue homeostasis [2], [3]. Inflammation is a reflection of cell damage caused by infection, physical injury or tissue response to antibody rejection [4]. Clinical symptoms of inflammation are characterized by rubor (redness), calor (heat), tumor (swelling), dolor (pain) and functio laesa (loss of function) [5].

Hemigraphis alternata has a long history as ethnomedicine for wound healing and has been recorded in ancient Indian medicinal texts since 3000 BC [6]. This plant contains flavonoids which are predicted to provide anti-inflammatory effects [7], [8]. There are 23 secondary metabolites that have been isolated from the plant [6].

Non-steroidal anti-inflammatory drugs (NSAIDs) are the most commonly anti-inflammatory drugs used in the worldwide. They act via cyclooxygenase isozyme (COX) inhibition and are a key component of pharmacological management of acute and chronic pain [9]. COX-1 is constitutively expressed in most tissues (eg, platelets, lung, prostate, brain, gastrointestinal tract, kidney, liver and spleen), whereas COX-1-derived prostanoids are involved in homeostatic function [10]. COX-2 is less widely expressed, constitutively expressed in several tissues and organs such as brain, kidneys and reproductive tract [11].

In silico study is individual computer simulations for development or evaluation of drugs [12]. In silico methods can be used to predict the drugs affect in biological systems which improve the clinical use, avoid the side effects and

guide to the better treatment selection and development. This study provides additional benefits for generating hypotheses about the biological mechanism of drugs or disease in new drug candidates discovery [13].

Molecular docking is the activity of small molecules on the binding side of the protein target [14], [15]. The result of molecular docking is the energy required by the ligands to bind to proteins. The low bond energy indicates that the ligand is easy to bind to the target protein [16].

The aim of this study was to predict the anti-inflammatory compounds in the leaves of *Hemigraphis alternata* which have a greater affinity for COX-1 than the comparator drug, aspirin through in silico study. Therefore, new drug candidates can be obtained for anti-inflammatory.

2. MATERIALS AND METHODS

2.1. Tools

The hardwares used in this study were a set of laptop with specifications processor AMD-A4-9125 RADEON R3, 4 COMPUTE CORES 2C+2G (2CPUs) ~2.3GHz with operating system windows 10 Home 64-bit and operating system Linux Ubuntu 16.04 LTS 64-bit and supercomputer processor AMD Ryzen 7 3700X, GPU Nvidia GeForce with operating system ubuntu 20.04. The softwares used were Protein Data Bank (<http://www.rcsb.org/pdb>), Chimera version 1.13, DOCK version 6.9, Discovery Studio Visualizer version 17.2.0.16349 and Pub-Chem (<http://PubChem.ncbi.nlm.nih.gov>).

2.2. Materials

The three-dimensional (3D) structure of COX-1 receptor (PDB code 1eqg) was downloaded from Protein Data Bank. The 3D structure of 23 ligands and aspirin were downloaded from PubChem.

2.3. Methods

Docking study were conducted using DOCK with flexible docking method. The first step in docking using DOCK program is to create a receptor surface using a Chimera, make and select the sphere. The purpose of making spheres is to make clusters on the receptor so that the coordinates of the ligand-receptor bonds are known. Next is making boxes and grids, then do molecular docking [16].

Redocking receptor COX-1 with its native ligand, ibuprofen was carried out first to validate the method to obtain Root Mean Square Deviation (RMSD) ≤ 2 Å [17]. This validation was carried out to know that the molecular docking system could obtain results which corresponds to the crystallographic ligand conformation [16].

Molecular docking was performed on ligands and the comparator drug, aspirin. The result is a grid score. The ligand with the smallest grid score is the best ligand because the energy used to bind to the receptors is getting smaller. After that, the docking results were visualized by Discovery Studio Visualizer to determine the bonds formed between the best ligand and the COX-1 receptor.

3. RESULTS AND DISCUSSION

The technique used for 3D virtual screening in this study is the molecular docking method. The molecular docking method uses a search strategy with a scoring function [18].

The docking method used in DOCK 6.9 with the molecular shape algorithm [19] in this study is flexible docking or it can also be called soft docking, where the backbone of the receptors and ligands is in a mobile state. There are 3 docking methods, rigid body docking, flexible ligand docking and flexible docking [20].

The validation method was performed before starting the docking study with redocking the native ligand, ibuprofen against COX-1 to determine the reliability of the docking protocol. RMSD of Redocking COX-1 with its native ligand, ibuprofen is 1.6 Å. The result of redocking yields RMSD < 2 Å, meaning that this method can be used for virtually any compound screening [21].

The result of molecular docking using DOCK 6.9 is a grid score which is the sum of Van der Waals energy and

electrostatic energy. The more negative grid score indicates a better bond between the ligand and the receptor [16].

The affinity of the compounds contained in the leaves of *Hemigraphis alternata* for anti-inflammation was known from the docking results against COX-1 (Table 1). The docking results showed that 3,7,11,15-Tetramethyl-2-hexadecen-1-ol had the greatest affinity among the 23 compounds with a grid score of -33.22 kcal/mol. This shows that the affinity is higher than aspirin as a comparator drug which requires more energy to interact with COX-1, -14.47 kcal/mol.

In the molecular docking result of 3,7,11,15-Tetramethyl-2-hexadecen-1-ol and COX-1 complex, there are 3 hydrogen bonds and 5 hydrophobic bonds (Figure 1). The hydrogen bonds formed in the complex are between NH2 arginine 459 receptor with O1 ligands (distance 3.36 Å), H40 ligands with O arginine 456 receptor (distance 2.83 Å) and H39 ligands with O arginine 456 receptor (distance 2.56 Å). The hydrophobic bonds formed in the complex are between alkyl proline 162 receptor with alkyl ligand (distance 5.42 Å), C12 ligand with alkyl proline 162 receptor (distance 4.22 Å), C13 ligand with alkyl valine 33 receptor (distance 4.83 Å), C18 ligand with alkyl proline 162 receptor (distance 5.12 Å) and C18 ligand with alkyl arginine 456 receptor (distance 4.62 Å). This compound was selected as a candidate for a new anti-inflammatory drug and is expected to be tested further for its activity against COX-1.

3,7,11,15-Tetramethyl-2-hexadecen-1-ol known as phytol (PYT) is an acyclic diterpene alcohol compound and a constituent of chlorophyll. 3,7,11,15-Tetramethyl-2-hexadecen-1-ol is a phytanic acid (PA) compound which cause various biological effects. There are some evidences suggesting that PA may play an important role in the development of pathophysiological conditions. The studies that have been conducted have shown that 3,7,11,15-Tetramethyl-2-hexadecen-1-ol has anxiolytic, metabolic-modulating, cytotoxic, antioxidant, autophagy- and apoptosis-inducing, antinociceptive, anti-inflammatory, immune-modulating, and antimicrobial effects [22].

3. CONCLUSION

The compound in *Hemigraphis alternata* leaves that has the greatest affinity for inhibiting COX-1 is 3,7,11,15-Tetramethyl-2-hexadecen-1-ol. It has a greater affinity than aspirin as a comparator drug. This shows that the leaves of *Hemigraphis alternata* contain potential active components that can be developed as anti-inflammatory drugs.

4. FIGURES AND TABLES

Table 1. Molecular docking result of the compounds to COX-1 using DOCK 6.9

No	Compound	Grid Score (kcal/mol)	No	Compound	Grid Score (kcal/mol)
1	Aspirin (comparator drug)	-14.47	13	Z-2-Dodecenol	-23.18
2	15-Chloro-4-pentadecyne	-25.87	14	15-Chloro-4-pentadecyne	-24.55
3	4-(2-Methoxyphenyl)piperidine	-14.45	15	2-Methylenecholestan-3-ol	-28.16
4	Cyclobutanol	-9.84	16	L- Alanine	-13.84
5	1-Hexadecyne	-21.20	17	levodopa	-22.53
6	2-Propylmanonic acid	-19.90	18	Glycylsarcosine	-20.07
7	n-Hexadecanoic acid	-29.89	19	5-Hydroxymethylfurfural	-13.71
8	2-Hexylacrylonitrile	-15.85	20	10-Undecyn-1-ol	-20.09
9	3,7,11-Trimethyl-1,6,10-dodecatrien-3-ol	-20.66	21	2,5-Dimethyl-2,3-dihydro-5H-1,4-dioxepine	-12,97
10	8a-Methylhexahydro-1,8(2H,5H)-naphthalenedione	-11.03	22	4-Nitro-5-hydroxy-1,2-dimethylindole	-16.82
11	Acrylonitrile β-[3-(2,2-dimethylcyclopropyl)-2,2-dimethylcyclopropyl]	-16.37	23	9,9-Dimethoxybicyclo[3.3.1]nona-2,4-dione	-14.49
12	3,7,11,15-Tetramethyl-2-hexadecen-1-ol	-33.22	24	2,7-Dioxa-tricyclo[4.4.0.0(3,8)]deca-4,9 diene	-9.31

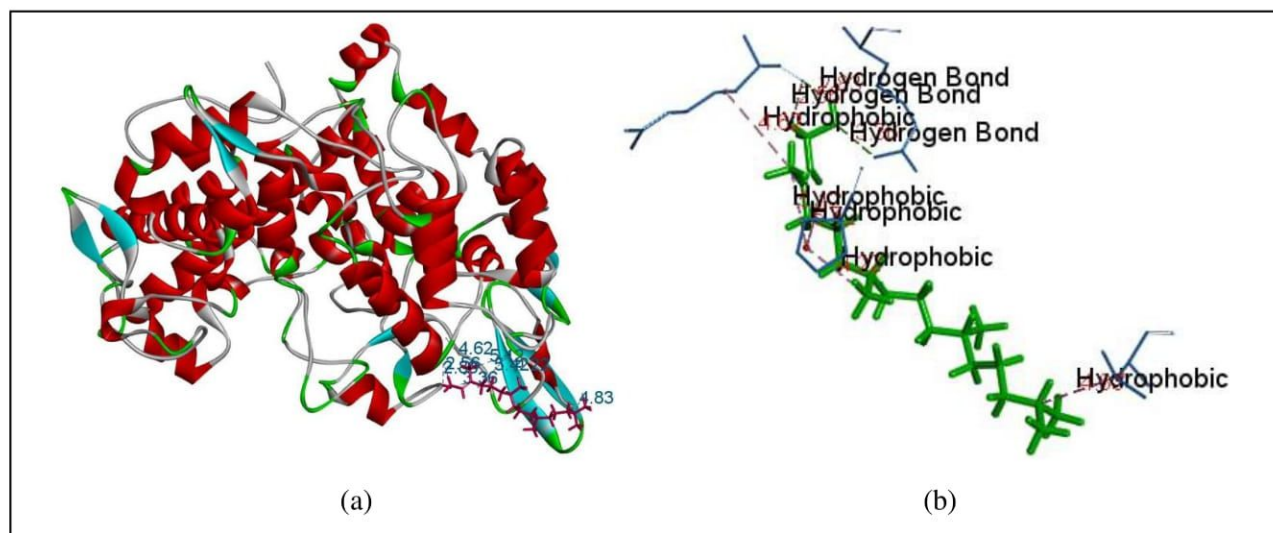


Figure 1 Visualization of docking result 3,7,11,15-Tetramethyl-2-hexadecen-1-ol to COX-1 using Discovery Studio Visualizer 17.2.0.16349 (a) 3D (b) 2D.

AUTHORS' CONTRIBUTIONS

Yeni Yeni; Conceptualization, data curation, writing-original draft preparation, writing-review and editing, supervision, project administration, funding acquisition. Rizky Arcintha Rachmania; methodology, software and validation. Mochamad Dicky Yanuar M R; formal analysis, investigation, resources and visualization

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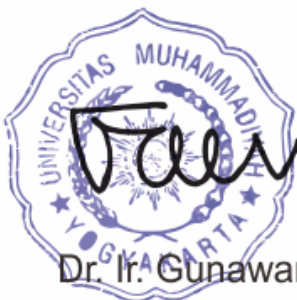
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