Tropical Journal of Natural Product Research

TJNPR

www.tjnpr.org

Tropical Journal of
NATURAL PRODUCT RESEARCH

This journal is indexed in Open J-Gate, Crossref, Creative Commons, Index Copernicus, Google Scholar.

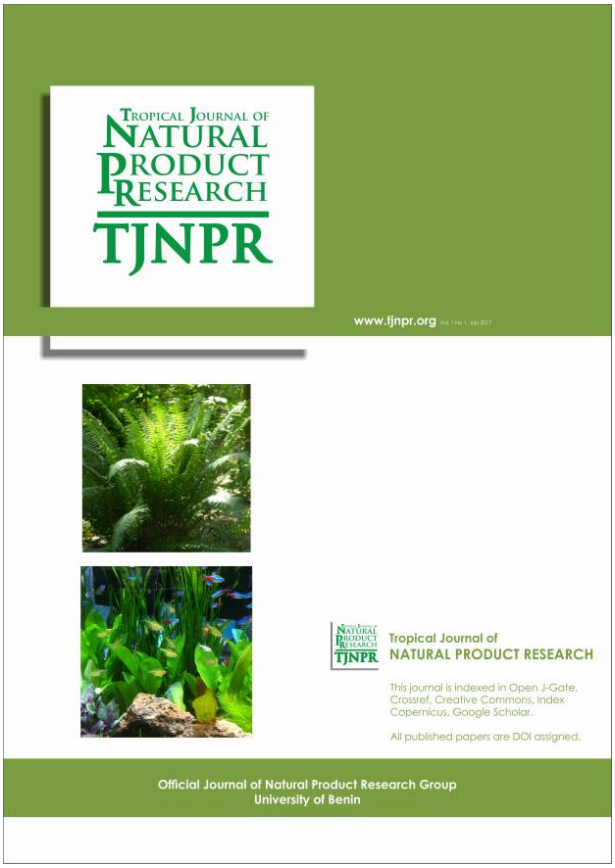
All published papers are DOI assigned.

Official Journal of Natural Product Research Group
University of Benin

Editor-in-Chief, Prof. Abiodun Falodun (contacteditorinchief.aspx)

(https://phytochemicalsociety.org/?tribe_events=2nd-international-conference-for-science-and-society-phytomedicine-and-nutraceuticals-for-global-health-2)

Submit a Manuscript (submitmanuscript.aspx)



(https://www.scimagojr.com/journalsearch.php?q=21100933230&tip=sid&exact=no)

ISSN: 2616-0684 (Print)

ISSN: 2616-0692 (Online)

DOI: 10.26538/tjnpr (https://tjnpr.org/)

Index Copernicus Value (ICV) for 2017: 59.83 (https://journals.indexcopernicus.com/search/form?search=Tropical%20Journal%20of%20Natural%20Product%20Research)

Scopus citescore 0.3 (2020)

Indexing & Abstracting

(https://www.scopus.com/sourceid/21100933230)


GENEVA FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH

Editor-in-Chief, Prof. Abiodun Falodun (contacteditorinchief.aspx)

(https://phytochemicalsociety.org/?tribe_events=medicinal-plants-present-and-perspectives-mappps-2020)

Search

Search articles

Submit

Vol. 5(3) pp 410-602: March/2021

03 March

Reviews

Potential of *Orthosiphon aristatus* Blume Miq as Antiviral: A Review (viewarticle.aspx?articleid=1403)

Fahrauk Faramayuda, Totik Sri Mariani, Elfahmi Elfahmi, Sukrasno Sukrasno

http://www.doi.org/10.26538/tjnpr/v5i3.1 (https://www.doi.org/10.26538/tjnpr/v5i3.1)

410-419 HTML (viewarticle.aspx?articleid=1403) PDF (img/manuscript_1403_1-TJNPR-2020-M397 Galley Proof.pdf)

Beneficial Effect of Lycopene on Diabetes Mellitus and its Possible Mechanism: A Review (viewarticle.aspx?articleid=1373)

Hanna Goenawan, Yuni S. Pratiwi, Nararian P. Dewi, Achadiyani Achadiyani, Nova Sylviana

http://www.doi.org/10.26538/tjnpr/v5i3.2 (https://www.doi.org/10.26538/tjnpr/v5i3.2)

420-433 HTML (viewarticle.aspx?articleid=1373) PDF (img/manuscript_1373_2-TJNPR-2021-M017 Galley Proof.pdf)

Short Communication

Effect of Different Types of Omega-3 Fish Oil on the Physiological, Biochemical and Immunological Parameters in Male Rabbits (viewarticle.aspx?articleid=1374)

Wedad ML Al-Obaidi, Mohanad HM Al-Izzi

http://www.doi.org/10.26538/tjnpr/v5i3.3 (https://www.doi.org/10.26538/tjnpr/v5i3.3)

434-439 HTML (viewarticle.aspx?articleid=1374) PDF (img/manuscript_1374_3-TJNPR-2020-M081 Galley proof.pdf)

Mixed Ligand of Mercury (II) Complexes of 4-Flouro-2-Cyanoaminothiophenolate with Amine or Triphenylphosphine as Co-Ligand (viewarticle.aspx?articleid=1375)

Adnan A. Hamada, Wesam H. Khalaf, Samar S. Mohammed, Ihmood K. Jebur
http://www.doi.org/10.26538/tjnpr/v5i3.4 (https://www.doi.org/10.26538/tjnpr/v5i3.4)

440-444 HTML (viewarticle.aspx?articleid=1375) PDF (img/manuscript_1375_4-TJNPR-2020-M203 Galley Proof.pdf)

Effect of Lactobacillus Species on the Expression of Gene Related to Biofilm Formation by *Streptococcus mutans* (viewarticle.aspx?articleid=1376)

Mustafa Helmi, Hajer Ibrahem
http://www.doi.org/10.26538/tjnpr/v5i3.5 (https://www.doi.org/10.26538/tjnpr/v5i3.5)

445-447 HTML (viewarticle.aspx?articleid=1376) PDF (img/manuscript_1376_5-TJNPR-2020-M302 Galley proof.pdf)

Molecular Study of Bcl1 (+647 C/G) Glucocorticoid Receptor Polymorphism of Some Iraqi Patients with Type 2 Diabetes Mellitus (viewarticle.aspx?articleid=1378)

Wasan N. Husain, Adnan F. AL-Azzawie, Susan J. Ali, Husam I. Al-muslah
http://www.doi.org/10.26538/tjnpr/v5i3.6 (https://www.doi.org/10.26538/tjnpr/v5i3.6)

448-452 HTML (viewarticle.aspx?articleid=1378) PDF (img/manuscript_1378_6-TJNPR-2021-M068 Galley Proof.pdf)

The Altered Efficacy of Traditional Antidiabetic Formulations in Chittagong Division: Metformin Admixing (viewarticle.aspx?articleid=1379)

Sumaiya Nahid, Trissa Saha, Ruhul Amin, Md. Atiar Rahman, Akif Md. Thousif, Afsara T. Chowdhury, Md. Zafar A. Sadiq, Abul B. M. Faroque
http://www.doi.org/10.26538/tjnpr/v5i3.7 (https://www.doi.org/10.26538/tjnpr/v5i3.7)

453-459 HTML (viewarticle.aspx?articleid=1379) PDF (img/manuscript_1379_7-TJNPR-2021-M089 Galley Proof.pdf)

Original Research Articles

Evaluation of Analgesic, CNS Depressant and Antidiarrhoeal Activities of *Psidium guineense* Leaf Extract (viewarticle.aspx?articleid=1380)

Mahmuda Akhter, Sayema Arefin, Rabindra N. Acharyya, Halima Akter, Sadia Jahan, Joy C. Rajbangshi
http://www.doi.org/10.26538/tjnpr/v5i3.8 (https://www.doi.org/10.26538/tjnpr/v5i3.8)

453-459 HTML (viewarticle.aspx?articleid=1380) PDF (img/manuscript_1380_8-TJNPR-2020-M223 Galley Proof.pdf)

Comparative Analysis of Phytochemicals and Antioxidant Activity of Ethanol Extract of *Centella asiatica* Leaves and its Nanoparticle Form (viewarticle.aspx?articleid=1381)

Bayyinatul Muchtaromah, Soraya Habibie, Burhan Ma'arif, Realsyah Ramadhan, Evika S. Savitri, Zahrotul F. Maghfuroh
http://www.doi.org/10.26538/tjnpr/v5i3.9 (https://www.doi.org/10.26538/tjnpr/v5i3.9)

465-469 HTML (viewarticle.aspx?articleid=1381) PDF (img/manuscript_1381_9-TJNPR-2020-M319 Galley Proof.pdf)

Antibacterial and Antioxidant Activities of Local Honey from Jordan (viewarticle.aspx?articleid=1382)

Khaled M. Khleifat, Haitham Qaralleh, Muhamad O. Al-limoun, Enas M. Al-khlifeh, Sundus A. Aladaileh, Nafi Tawarah, Ibrahim S. Almajali
http://www.doi.org/10.26538/tjnpr/v5i3.10 (https://www.doi.org/10.26538/tjnpr/v5i3.10)

470-477 HTML (viewarticle.aspx?articleid=1382) PDF (img/manuscript_1382_10-TJNPR-2020-M372 Galley Proof.pdf)

Cytotoxicity in Swiss Albino Mice by Extract of *Aspergillus tubingensis* (CRE4) Endophyte Isolated from *Catharanthus roseus* (viewarticle.aspx?articleid=1383)

Eman A.M. Ali, Tahany M.A. Abdel-Rahman, Azza H.M. Hassan, Hedia-Allah Ebrahim
http://www.doi.org/10.26538/tjnpr/v5i3.11 (https://www.doi.org/10.26538/tjnpr/v5i3.11)

478-484 HTML (viewarticle.aspx?articleid=1383) PDF (img/manuscript_1383_11-TJNPR-2020-M379 Galley Proof.pdf)

Cytotoxic Activity of Combining Molecular Iodine and Dihydroartemisinin with Methanol Extracts of *Carica papaya* Linn and *Vernonia amygdalina* Delile Leaves against MCF-7 and MDA-MB-231 Br (viewarticle.aspx?articleid=1384)

Jadwiga Nowak, Charles Wambebe, Jackson Mukonzo, Esther Katuura
http://www.doi.org/10.26538/tjnpr/v5i3.12 (https://www.doi.org/10.26538/tjnpr/v5i3.12)

485-493 HTML (viewarticle.aspx?articleid=1384) PDF (img/manuscript_1384_12-TJNPR-2020-M388 Galley Proof.pdf)

Chemical Properties of Black Rice Yeast Extracts as Pharmaceutical Ingredients for the Management of Type 2 Diabetes mellitus (viewarticle.aspx?articleid=1385)

Rudiana Agustini, Gusti I. M. Sanjaya, Nuniek Herdyastuti
http://www.doi.org/10.26538/tjnpr/v5i3.13 (https://www.doi.org/10.26538/tjnpr/v5i3.13)

494-502 HTML (viewarticle.aspx?articleid=1385) PDF (img/manuscript_1385_13-TJNPR-2020-M389 Galley Proof.pdf)

Optimization of Acid Concentration and Hydrolysis Time in the Isolation of Microcrystalline Cellulose from Water Hyacinth (*Eichornia crassipes* solm) (viewarticle.aspx?articleid=1386)

Fitrya Fitrya, Najma A. Fithri, Dina P. Wijaya, Egi P. Sembiring
http://www.doi.org/10.26538/tjnpr/v5i3.14 (https://www.doi.org/10.26538/tjnpr/v5i3.14)

503-508 HTML (viewarticle.aspx?articleid=1386) PDF (img/manuscript_1386_14-TJNPR-2020-M394 Galley proof.pdf)

The Efficacy of *Enteromorpha intestinalis* and *Cladophora crispata* Extracts against Sarcoptic Mange *In Vitro* and *In Vivo* (viewarticle.aspx?articleid=1387)

Ibtihal A. Al-Mousawi, Ghazwan T. Al-Jaber, Sabeeh H. AL-Mayah
http://www.doi.org/10.26538/tjnpr/v5i3.15 (https://www.doi.org/10.26538/tjnpr/v5i3.15)

509-513 HTML (viewarticle.aspx?articleid=1387) PDF (img/manuscript_1387_15-TJNPR-2020-M395 Galley Proof.pdf)

Formulation of Peel-Off Mask Containing Natural Antibacterial: Study on Poly Vinyl Alcohol (PVA) and Virgin Coconut Oil (VCO) Contents (viewarticle.aspx?articleid=1388)

Dewi M. Hariyadi, Isnaeni Isnaeni, Sisunandar Sudarma, Ni-Made K. Shandra, Noorma Rosita
http://www.doi.org/10.26538/tjnpr/v5i3.16 (https://www.doi.org/10.26538/tjnpr/v5i3.16)

514-518 HTML (viewarticle.aspx?articleid=1388) PDF (img/manuscript_1388_16-TJNPR-2020-M402 Galley Proof.pdf)

Assessment of Acute and Sub-Chronic Toxicity of HYK Aqueous Extracts in Experimental Animals (viewarticle.aspx?articleid=1389)

Quang Y. Pham , Tien H. Vuong, Minh T. Doan, Hoang N. Nguyen
http://www.doi.org/10.26538/tjnpr/v5i3.17 (https://www.doi.org/10.26538/tjnpr/v5i3.17)

519527 HTML (viewarticle.aspx?articleid=1389) PDF (img/manuscript_1389_17-TJNPR-2020-M422 Galley proof.pdf)

Antioxidant, Antibacterial, Total Phenolic and Flavonoid Contents of Sungkai Leaves (*Paronema canescens*) (viewarticle.aspx?articleid=1390)

Muharni Muharni, Ferlinahayati Ferlinahayati, Heni Yohandini
http://www.doi.org/10.26538/tjnpr/v5i3.18 (https://www.doi.org/10.26538/tjnpr/v5i3.18)

528-533 HTML (viewarticle.aspx?articleid=1390) PDF (img/manuscript_1390_18-TJNPR-2021-M006 Galley Proof.pdf)

Chemical Profiling, *In Vivo* Antioxidant Effect and Antimutagenic Evaluation of *Melilotus indicus* (L.) All. Extracts (viewarticle.aspx?articleid=1391)

Nermin A. Ragab, Elsayed A. Aboutabl, Mona M. Marzouk, Ali M. El Halawany, Ayman A. Farghaly, Amany A. Sleem, Salma A. El Sawi
http://www.doi.org/10.26538/tjnpr/v5i3.19 (https://www.doi.org/10.26538/tjnpr/v5i3.19)

534-542 HTML (viewarticle.aspx?articleid=1391) PDF (img/manuscript_1391_19-TJNPR-2021-M014 Galley proof.pdf)

Antioxidant Compound of Endophytic Fungi *Penecillium oxalicum* Isolated from *Swietenia mahagoni* L. Jacq (viewarticle.aspx?articleid=1392)

Fadhillah Fadhillah, Elfita Elfita, Muharni Muharni, Heni Yohandini, Hary Widjajanti
http://www.doi.org/10.26538/tjnpr/v5i3.20 (https://www.doi.org/10.26538/tjnpr/v5i3.20)

543-548 HTML (viewarticle.aspx?articleid=1392) PDF (img/manuscript_1392_20-TJNPR-2021-M031 Galley Proof.pdf)

Effect of Epigallocatechin Gallate on Cadmium Chloride-Induced Changes in Behavior, Biochemical Parameters and Spermatogenesis of Male Sprague Dawley Rats (viewarticle.aspx?articleid=1393)

Subramani Parasuraman, Lam C. Hui, James Y. K Beng, Brenda N. Y Qin
http://www.doi.org/10.26538/tjnpr/v5i3.21 (https://www.doi.org/10.26538/tjnpr/v5i3.21)

549-554 HTML (viewarticle.aspx?articleid=1393) PDF (img/manuscript_1393_21-TJNPR-2021-M032 Galley Proof.pdf)

In Vitro Antiamoebic Activity of *Cnestis ferruginea* and *Dianthus basuticus* on *Entamoeba histolytica* Trophozoites (viewarticle.aspx?articleid=1394)

Teslim O. Ojuromi , Tom A. O. Ashafa, Jesus N. Garza-Gonzalez, Francisco Gonzalez-Salazar
http://www.doi.org/10.26538/tjnpr/v5i3.22 (https://www.doi.org/10.26538/tjnpr/v5i3.22)

555-558 HTML (viewarticle.aspx?articleid=1394) PDF (img/manuscript_1394_22-TJNPR-2021-M066 Galley Proof.pdf)

Acute Toxicity and Liver Protective Effects of *Elephantopus mollis* H.B.K (viewarticle.aspx?articleid=1395)

Dat T. Phan , Phuc T. H. Nguyen
http://www.doi.org/10.26538/tjnpr/v5i3.23 (https://www.doi.org/10.26538/tjnpr/v5i3.23)

559-563 HTML (viewarticle.aspx?articleid=1395) PDF (img/manuscript_1395_23-TJNPR-2021-M075 Galley Proof.pdf)

Characteristics and Cytotoxic Activity of Fucoidan from the Brown Seaweed *Sargassum hystrix* against MCF-7 Breast Cancer Cells (viewarticle.aspx?articleid=1396)

Amir Husni, Bayu Pamungkas, Ellya Sinurat, Alim Isnansetyo

http://www.doi.org/10.26538/tjnpr/v5i3.24 (https://www.doi.org/10.26538/tjnpr/v5i3.24)

564-569 HTML (viewarticle.aspx?articleid=1396) PDF (img/manuscript_1396_24-TJNPR-2021-M088 Galley proof.pdf)

Antioxidant and Anti-Proliferative Studies on *Kigelia africana* (Lam.) Benth. and its Constituents (viewarticle.aspx?articleid=1397)

Akingbolabo D. Ogunlakin , Mubo A. Sonibare, Almas Jabeen, Syeda F. Shah, Farzana Shaheen

http://www.doi.org/10.26538/tjnpr/v5i3.25 (https://www.doi.org/10.26538/tjnpr/v5i3.25)

570-575 HTML (viewarticle.aspx?articleid=1397) PDF (img/manuscript_1397_25-TJNPR-2020-M404 Galley Proof.pdf)

Antimicrobial Activity, Phytochemistry and Acute Toxicity Profile of *Sarcocephalius latifolius* Root Bark (viewarticle.aspx?articleid=1398)

Ifeoma M. Ezeonu, Ikechukwu K. Chukwudozie

http://www.doi.org/10.26538/tjnpr/v5i3.26 (https://www.doi.org/10.26538/tjnpr/v5i3.26)

576-581 HTML (viewarticle.aspx?articleid=1398) PDF (img/manuscript_1398_26-TJNPR-2020-M407 Galley Proof.pdf)

HPLC Fingerprint Associated with Chemometrics of *Guiera senegalensis* Leaf Extracts (viewarticle.aspx?articleid=1399)

Salisu Awwalu, Aminu Musa, Aliyu M. Musa, Magaji Garba

http://www.doi.org/10.26538/tjnpr/v5i3.27 (https://www.doi.org/10.26538/tjnpr/v5i3.27)

582-586 HTML (viewarticle.aspx?articleid=1399) PDF (img/manuscript_1399_27-TJNPR-2020-M074 Galley proof.pdf)

Antidepressant Activity of Methanol whole Plant Extract of *Tapinanthus dodoneifolius* (DC) Danser in Swiss Mice (viewarticle.aspx?articleid=1400)

Nura Bello, Mohammed G Magaji, Mohammed I Maje, Aishatu Shehu

http://www.doi.org/10.26538/tjnpr/v5i3.28 (https://www.doi.org/10.26538/tjnpr/v5i3.28)

587-590 HTML (viewarticle.aspx?articleid=1400) PDF (img/manuscript_1400_28-TJNPR-2020-M236 Galley proof.pdf)

Effects of Sun-Drying and Oven-Drying on the Nutrients, Anti-Nutrients, and Bioavailability of some Minerals in Commonly Consumed Capsicum Varieties in Nigeria (viewarticle.aspx?articleid=1401)

Olutayo S. Shokunbi, Dunmomi Afolabi, Chinonso C. Obiukwu, Faith T. Ogbonnaya, Elizabeth O. Ngozi, Gogonte H. Amah

http://www.doi.org/10.26538/tjnpr/v5i3.29 (https://www.doi.org/10.26538/tjnpr/v5i3.29)

591-596 HTML (viewarticle.aspx?articleid=1401) PDF (img/manuscript_1401_29-TJNPR-2020-M361 Galley Proof_1.pdf)

Glycemic Indices, Possible Antidiabetic Potentials and Phenolic Contents of some Indigenous Green Leafy Vegetables (GLVs) (viewarticle.aspx?articleid=1402)

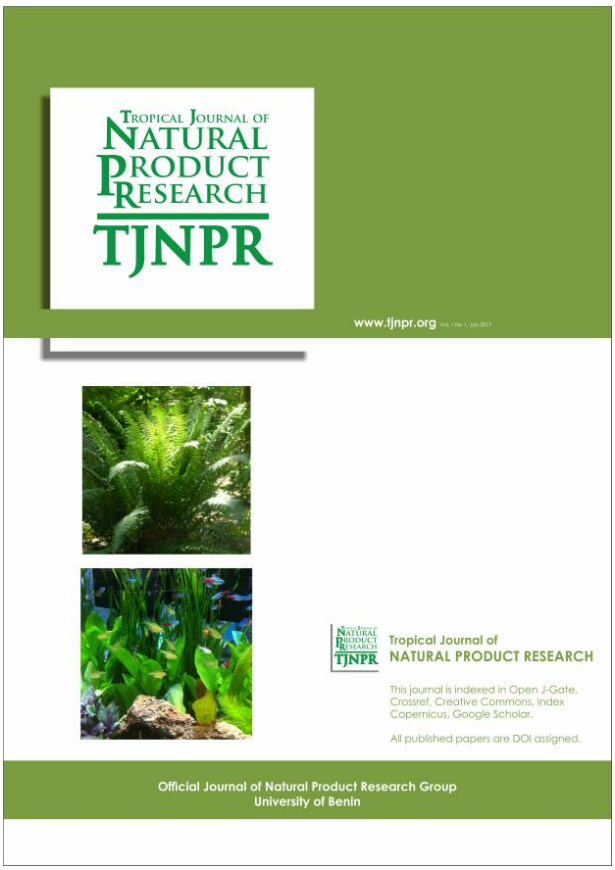
Gbenga P. Akerele, Sunday I. Oyeleye, Magaret G. Busari, Ganiyu Oboh

http://www.doi.org/10.26538/tjnpr/v5i3.30 (https://www.doi.org/10.26538/tjnpr/v5i3.30)

597-602 HTML (viewarticle.aspx?articleid=1402) PDF (img/manuscript_1402_30-TJNPR-2021-M016 Galley Proof.pdf)

OPEN ACCESS

Submit a Manuscript (submitmanuscript.aspx)



(https://www.scimagojr.com/journalsearch.php?q=21100933230&tip=sid&exact=no)

ISSN: 2616-0684 (Print)

ISSN: 2616-0692 (Online)

DOI: 10.26538/tjnpr (https://tjnpr.org/)

Index Copernicus Value (ICV) for 2017: 59.83 (https://journals.indexcopernicus.com/search/form?search=Tropical%20Journal%20of%20Natural%20Product%20Research)

Scopus citescore 0.3 (2020)

Indexing & Abstracting

(https://www.scopus.com/sourceid/21100933230)

(https://creativecommons.org/licenses/by-nc-nd/4.0/)

ABOUT TJNPR

About the Journal (about.aspx)

Aims & Scope (aimsandscope.aspx)

Editor Profile (editorprofile.aspx)

Editorial Board (editorialboard.aspx)

RESOURCES

Editorial Policy & Malpractice Statement (editorialpolicystatement.aspx)

Guide for Authors (guideforauthors.aspx)

Guidelines for Reviewers (guideforreviewers.aspx)

Open Access Policy (openaccesspolicy.aspx)

MY ACCOUNT

Authors (loginauthors.aspx)

Editors (logineditors.aspx)

Reviewers (loginreviewers.aspx)

Subscribers (loginsubscribers.aspx)

ISSUES

Current (currentissue.aspx)

Archives (archivevolume.aspx)

Home (index.aspx) About Us (about.aspx) Contact Us (contact.aspx) FAQ (faq.aspx) Top

Trop J Nat Prod Res, March 2021; 5(3):514-518

ISSN 2616-0684 (Print)
ISSN 2616-0692 (Electronic)

Tropical Journal of Natural Product Research

Available online at https://www.tjnpr.org

Original Research Article

Formulation of Peel-Off Mask Containing Natural Antibacterial: Study on Poly Vinyl Alcohol (PVA) and Virgin Coconut Oil (VCO) Contents

Dewi M. Hariyadi[1]*, Isnaeni Isnaeni[1], Sisunandar Sudarma[2], Ni-Made K. Shandra[1], Noorma Rosita[1]

[1]*Department of Pharmaceutical Sciences, Faculty of Pharmacy, Universitas Airlangga, Surabaya-Indonesia*
[2]*Department of Biology, Universitas Muhammadiyah Purwokerto, Indonesia*

ARTICLE INFO

Article history:
Received 09 December 2020
Revised 21 January 2021
Accepted 03 March 2021
Published online 01 April 2021

ABSTRACT

Some natural antibacterials have been investigated widely. Virgin Coconut Oil is one of natural resources which has been known to have antibacterial activity. Lauric acid as main component of VCO has been observed to have antibacterial activity for acne treatment. VCO and the extract have been tested previously for antibacterial activity. This research aims to prepare peel-off mask of VCO kopyor and investigate the effect of PVA and VCO concentration on the physical characteristics. VCO 20% and 30% were formulated containing Poly Vinyl Alcohol (PVA) in various concentrations (8% and 10%). The emulgel peel-off mask was then evaluated for viscosity, pH, drying time, spreadability, particle size and distribution, zeta potential, antibacterial activity, and also stability thermal cycling evaluation at the temperature 40°±2°C and 4°C±2°C in 3 cycles. The selected optimum formula was formula 1 containing 20% of VCO and 8% of PVA. This formula has a pH that is suitable with skin pH 4.5-6.5, had no significant difference in zeta potential, good spreadability, and provided antibacterial activity that had no significance different from other formulas that contain more concentration of VCO and PVA. In Vitro characteristics of peel-off VCO mask demonstrated potential therefore it is recommended for further *in vivo* study for acne diseases.

Keywords: Natural Antibacterial, PVA, VCO, Peel-off Mask, Acne Diseases.

Introduction

Pimple or *acne vulgaris* is an inflammatory condition on the skin, where there is a blockage in the sebaceous glands and hair (polysebaceous follicles).[1] The condition of the blocked pilosebaceous follicle and sebum build up occurs, resulting in *Propionibacterium acnes* bacteria to develop well because of the supportive environment.[1] To overcome the problem of acne caused by the presence of *Proprionibacterium acnes* bacteria which cause many problems including youth's performances and infections, [2] treatment with antibacterial drugs such as benzoyl peroxide or a combination of antibiotics is required according to the severity of acne.[3] However, the use of antibiotic drugs can cause resistance if used incorrectly. Rahmi et al., 2015 reviewed that as many as 50% of the Proprionibacterium acnes isolates with various strains studied from acne patients experienced resistance to the antibiotics clindamycin and erythromycin, while 20% of these isolates were resistant to tetracycline antibiotics.[4] Therefore, the development of a new alternative medicine derived from natural resources is desirable. One of the most commonly found tropical plants in Indonesia is coconut (*Cocos nucifera* L.) (Arecaceae family) and one of them is the variety of kopyor, which is coconut that has genetic deviation. The main fatty acid contained in kopyor *endocarp* of coconut is lauric acid. It is known that lauric acid has a strong antibacterial and anti-inflammatory effect on *Propionibacterium acnes* bacteria.[5] *Endocarp* of coconut containing lauric acid can be extracted to obtain pure coconut oil or *Virgin Coconut Oil* (VCO). Some studies using VCO demonstrated antibacterial activity, [5-7] however the formulation did not use a VCO peel-off method. Therefore, this research will observe the antibacterial activity of VCO in the forms of peel-off mask. According to Sia et al., 2010, lauric acid is included in medium-chain saturated fatty acids which have strong antimicrobial effects.[6] Nakatsuji et al., 2009 mentioned that lauric acid has a strong antibacterial and anti-inflammatory effect against *Propionibacterium acnes* bacteria.[5] Based on research by Santoso *et al*., 1995, the results of the analysis of the fatty acid profile of kopyor coconut meat found lauric acid with a percentage of 46.9%.[8] Coconut meat extracted by fermentation method, centrifugation method, or oil addition method can produce virgin coconut oil or hereinafter referred to as virgin coconut oil (VCO).[9] According to Dumancas *et al*., 2016, VCO contains high levels of saturated fatty acids such as lauric acid, caproic acid, and caprylic acid.[10]

The advantages of the peel off mask include easy to apply, does not cause greasiness and easy to clean because it will form an occlusive film that can be peeled off. Peel off masks can also increase the permeability of active agent because of their occlusivity.[11] One of the gelling agents commonly used for making peel off masks is polyvinyl alcohol (PVA).[12] PVA is a water-soluble synthetic polymer and has several functions, one of which is to increase the viscosity.[13,14] The gel produced by polyvinyl alcohol dries easily and forms a strong transparent film, and adheres well to the skin.[12]

This study aims to determine the VCO concentration of kopyor plant that will be used in peel off emulgel mask to provide antibacterial activity against *Propionibacterium acnes* ATCC 11827, as well as determining the effect of concentration of *Poly Vinyl Alcohol* (PVA) on peel off mask's physical characteristics (pH, viscosity,spreadability drying time, droplet size, size distribution and zeta potential).

*Corresponding author. E mail: dewi-m-h@ff.unair.ac.id
Tel: +62 812 32238383

Citation: Hariyadi DM, Isnaeni I, Sudarma S, Shandra NMK, Rosita N. Formulation of Peel-Off Mask Containing Natural Antibacterial: Study on Poly Vinyl Alcohol (PVA) and Virgin Coconut Oil (VCO) Contents. Trop J Nat Prod Res. 2021; 5(3):514-518. doi.org/10.26538/tjnpr/v5i3.16

Official Journal of Natural Product Research Group, Faculty of Pharmacy, University of Benin, Benin City, Nigeria.

ISSN 2616-0684 (Print)
ISSN 2616-0692 (Electronic)

Materials and Methods

Collection of Plant Materials

VCO from Kopyor coconut were collected from Indonesian garden of kopyor coconut in 2-hectare areas of University of Muhammadiyah Purwokerto campus, Campus Dukuhwaluh, Kembaran, Purwokerto, and Central Java, Indonesia. The kopyor coconut was collected by Professor Sisunandar in 12 September 2019 (Sample voucher numbers PWTFF 01-05). All pharmaceutical grades of chemicals were used for this research.

Production of Kopyor VCO using Centrifugation Method

Coconut meat was mixed with water in a ratio of 1:1 and was squeezed until coconut milk was obtained. Coconut milk was hushed up until two layers were formed. The two parts were then carefully separated. The part that was taken was the top coconut milk head and was centrifuged at 2500 rpm for 60 minutes. Three layers were then formed: oil in the upper part, oil pulp in the middle layer, and water in the lower layer. The oil layer was then carefully removed so that it did not mix with the oil pulp and water.[15]

Qualitative Examination of VCO

Qualitative VCO examination was aimed at ensuring that the VCO is of good quality. Parameter analysed includes; organoleptic properties in terms of color, odor, and taste; density; refractive index and lauric acid level, and compared to the standard reference.[11]

Production of VCO Peel Off Emulgel Mask

Polyvinyl alcohol (PVA) and Carbomer 940 solution as formula in Table 1 were made. In Carbomer 940 solution, TEA was dripped to adjust pH and formed gel. Second, flourished gelling agent was mixed. Tween 80 was dissolved in followed by propylene glycol, phenoxyethanol, and Na EDTA as the water phase. Then, the water phase was mixed with gel base which had expanded and was stirred homogeneously. VCO was mixed with Span 80 and Butyl Hydroxyl Toluene (BHT) as the oil phase followed by addition into the base of PVA and carbomer 940 and the mixture was stirred until homogeneous.

Determination of Kopyor VCO

VCO was determined by refractive index using refractometer, density and VCO content using Gas Chromatography (GC).

Minimum Inhibitory Concentration (MIC)

Streak plates of *Propionibacterium acnes* bacteria on nutrient agar plates were prepared. VCO concentration of 10-90% was prepared using polyethylenglycol solvent. The positive control of 2.5% benzoyl peroxide was used. The negative control of polyethylenglycol was prepared. The MIC was determined using disc diffusion method.[16, 17] The agar media was incubated at 35-37°C for 24 hours. The diameter of the inhibition zone was measured to determine the minimum inhibitory concentration.

Physical Characteristics Evaluation

pH and Viscosity test

The pH test was carried out using a pH meter on day 0 and 6 to check the pH stability. Measurements were replicated 3 times.[18] The viscosity test on day 0 and 6 was also done using a cone and plate CP-41 spindle viscometer on the rate of shear of 1 rpm triplicates.[19]

Spreadability Test

The spreadability test was done using two scales of glass plates. Gel preparations were weighed ±1 gram and was placed in the middle of a glass plate and then covered with another glass plate. At the top of the glass plate, a weight of 5 grams was given and then additional weight was given to the preparation until the preparation no longer spread. The measurement was replicated 3 times.[18]

Drying Time Examination

This test was done by weighing the gel of 700 mg. The gel was spread evenly on the glass plate with a size of 7.5 x 2.5 cm. The glass plate was put in an oven at 37±2.0°C to match the skin temperature. Drying time was monitored every 5 minutes until all gels had dried. [20, 21]

Particle size, polydispersity index (PDI), and Zeta potential

This test was conducted using Dynamic Light Scattering Malvern. VCO peel off mask were dissolved in a ratio of 1/100 (v/v). The particle size measurement, PDI and zeta potential (mV) was recorded.[22]

Evaluation of Antibacterial Activity

Antibacterial activity test against *Propionibacterium acnes* bacteria was done in nutrient agar media disc diffusion method. The wellbore was filled with formulas of 100 mg. The agar medium was incubated at 35-37˚C for 24 hours. The diameter of the inhibition zone was measured to determine the antibacterial activity.[23] Gel of 2.5% benzoyl peroxide was used as positive control.

Table 1: Formula of Kopyor VCO Peel Off Emulgel Mask

Chemicals	Functions	Content (%) in Formula					
		1	2	3	4	5	6
VCO	Active agent	20	30	20	30	-	-
PVA	Gelling agent / Film forming	8	8	10	10	8	10
Carbomer 940	Gelling agent	18	18	18	18	18	18
Triethanolamine	Alkalizing agent	0.5	0.5	0.5	0.5	0.5	0.5
Propylenglycol	Humectants, enhancers	15	15	15	15	15	15
BHT	Antioxidant	0.1	0.1	0.1	0.1	0.1	0.1
Tween 80	Surfactants	4.5	4.5	4.5	4.5	4.5	4.5
Span 80	Surfactants	0.5	0.5	0.5	0.5	0.5	0.5
Na-EDTA	Chelating agent	0.1	0.1	0.1	0.1	0.1	0.1
Phenoxyethanol	Preservative	18	18	18	18	18	18
Water	Solvent	Ad 100	Ad 100	Ad 100	Ad 100	Ad 100	Ad 100

Notes: Formula 1: 8% PVA with VCO 20%, Formula 2: 8% PVA with 30% VCO, Formula 3: 10% PVA with 20% VCO, Formula 4: 10% PVA with 30% VCO, Formula 5: 8% PVA gel base without VCO, Formula 6: 10% PVA gel base without VCO.

ISSN 2616-0684 (Print)
ISSN 2616-0692 (Electronic)

Evaluation of Physical Stability
The physical stability test of peel off mask were conducted at 4°C±2°C and 40°C±2°C for 3 cycles, during 6 days and observation was done on organoleptic, viscosity, pH, and zeta potential.

Statistical analysis
Statistical analysis was carried out using the one-way analysis of variance (ANOVA) method and to determine the significant difference between formulas, a confidence level of 0.95 was used ($\alpha = 0.05$).

Results and Discussion

VCO Physical Qualitative and MIC
Results of organoleptic, refractive index, and density was found as same as APCC standard (Asian and Pacific Coconut Community). Kopyor VCO had a clear yellow color, fresh coconut scented, and has no taste. The refractive index of VCO was 1.4537 (20°C) and the value was in accordance with the standard refractive index of VCO at a temperature of 20°C that was 1.4480-1.4541.
The result of VCO density was 0.921 g/cm^3. This value approaches the value of the standard density of VCO which is 0.915-0.920 g/cm^3. However, For VCO lauric acid content, it showed 24.96%. This result was not in accordance with APCC standards regarding lauric acid content in VCO which is 45-56%. This can be caused by differences in coconut varieties used.[24] Apart from differences in coconut varieties, the amount of lauric acid is also influenced by the age of the coconut. Young coconut has lower lauric acid content compared to old coconut. For antibacterial activity test, VCO showed inhibition (MIC) against *Propionibacterium acnes* ATCC 11827 bacteria at VCO concentration of 20%. This research compared effect of 20 and 30% VCO on the physical characteristics of peel-off mask.

pH and Viscosity Evaluation
Based on the results on figure 1, there was a decrease in pH in the entire formulas when compared with the pH of the peel-off mask before the stability test was done. However, the pH before and after the stability test was remained in the skin pH range of 4.5-6.5.[24] A decrease in pH in the stability test can be caused by an increase in free fatty acid in VCO oil during the storage process. Free fatty acid can be oxidized thereby increasing free fatty acid when exposed to high temperatures.[25]
From figure 2 viscosity results, statistical analysis using ANOVA was conducted and it demonstrated the comparison results between formulas had significantly different values. This showed that an increase in VCO levels and an increase in the PVA base level can increase the viscosity of the preparations. [26, 27] Based on the results of statistical tests using T-Test in pairs to compare the viscosity of the preparations before and after the stability test treatment, the result showed that all formulas had significantly different values, and it can be concluded that formulas 1 to 4 produced an increased viscosity after the stability test. This can be caused by the lack of adding emulsifier to the formula with higher VCO levels, causing a difference in viscosity between before and after the stability test treatment. An increase in emulgel consistency can also be caused by the evaporation of the largest solvent component in the emulgel, which is water.[11]

Spreadability and Drying Evaluation
Based on the slope value and the load to achieve maximum dispersion capacity from figure 3, it can be concluded that the base mask without active agent was easier to spread easier compared to the formula. It is appropriate that an increase in the viscosity of the preparations will reduce the spreadability of the preparations.[27]
It can be seen from figure 4, there was an increase in the drying time for formula 1 to 4 from 30 to 35 minutes. VCO-containing peel-off mask had a longer drying time compared to the two gel base formulas without active agent. This showed the drying time of the four formulas were longer than the gel mask drying time in general, which was less than 30 minutes.[19] This result was because VCO can withstand the evaporation of water in the preparation therefore it takes longer time to dry.

Antibacterial Activity of Peel-off Mask
All formulas showed inhibition against *Propionibacterium acnes* ATCC 11827 bacteria. The results of the antibacterial activity evaluation were shown in Table 2.
Based on one-way ANOVA statistical analysis test results, the ratio of inhibition between formulas did not significantly different. This can be influenced by the low content of lauric acid in kopyor VCO, so it is necessary to optimize the selection of coconut based on its variety and the preparation technique of processing VCO. [22, 28]

Stability Evaluation
Observation of the stability was carried out about 3 cycles by storing in a temperature of 4°±2°C and 40°±2°C for 6 hours, this method was modified from Iradhati.[29] Furthermore, organoleptic, pH, viscosity, particle size, PDI, and zeta potential of the formulas were re-observed.[30]
Table 3 showed the particle size of all formulas. Based on the statistical analysis, the average droplet size value of the formula increased after days 6 of stability test compared to day 0. During the storage, the droplets from emulsions in the gel have a large surface area so that the surface energy becomes large and reduce the energy therefore droplets tend to reduce their surface area by combining between droplets.

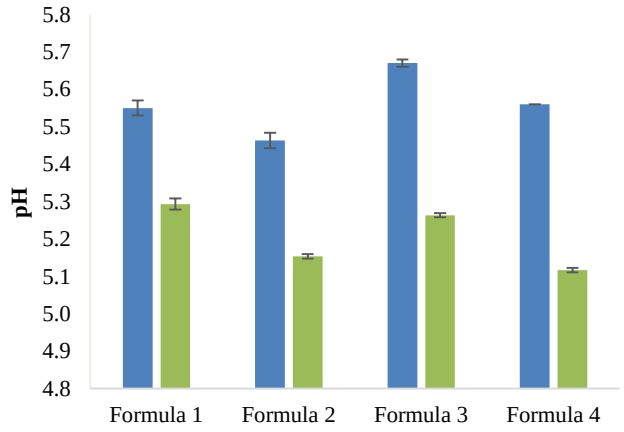


Figure 1: pH of the VCO peel off emulgel mask on day 0 (Blue) and 6 (Green).

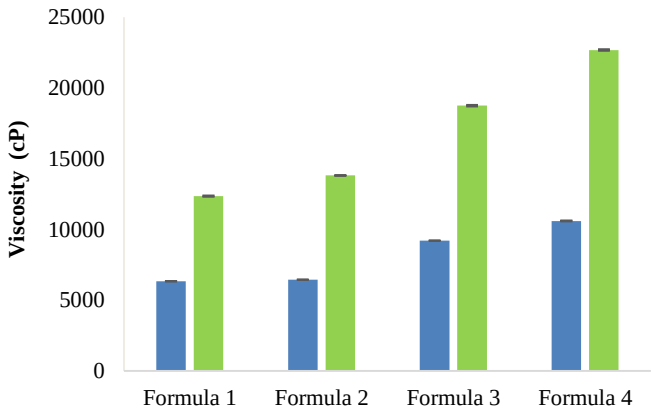


Figure 2: Viscosity of VCO peel off emulgel mask on day 0 (blue) and 6 (green)

ISSN 2616-0684 (Print)
ISSN 2616-0692 (Electronic)

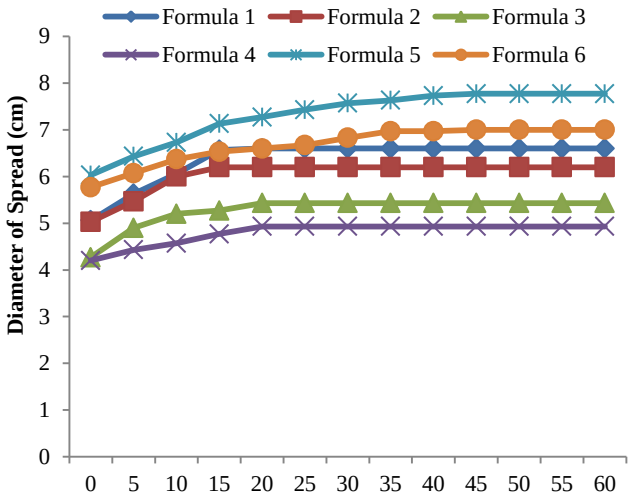


Figure 3: Spreadability test of VCO peel off emulgel mask

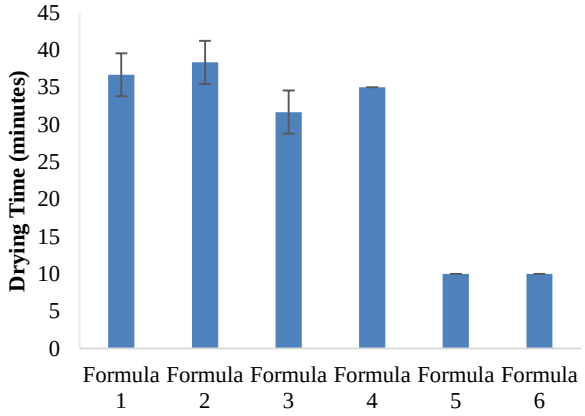


Figure 4: Drying time of VCO peel off emulgel mask

Table 2: Antibacterial Activity Test of VCO peel off Emulgel Mask

Formula	Inhibitory Zone Diameter (mm)
1	10.77 ± 0.03
2	11.0 ± 0.11
3	11.8 ± 0.10
4	12.0 ± 0.16

Table 4: Comparison of Zeta Potential on Day 0 and 6

Day	Potential Zeta (mV)			
	F1	F2	F3	F4
0	-23.40	-22.70	-27.70	-22.70
6	-23.20	-18.70	-21.20	-18.30

As for the results of the PDI on table 3, all four formulas have poly dispersity index of 0.3-0.5 which falls within the range of the monodispersion category of 0.01-0.7, thus indicating that the prepared droplet has a good level of uniformity and tend to be more stable.[31]
Zeta potential is one of the partial indicators to show the stability of a system containing dispersed droplets through the existence of repulsive forces between droplets with the same charge when close together. According to Honary and Zahir, 2013, if there is steric or electrostatic stabilization, the potential zeta value of at least ± 20 mV is considered stable. In the formulas, there was polyvinyl alcohol that has properties as a steric stabilizer that can adsorb the surface and act as a barrier on the surface of the droplet therefore it will prevent the droplet from reuniting.[32]
Based on zeta potential results, four formulas were categorized having sufficient stability (Table 4). However, after 6 days on the stability test, the Zeta potential decreased with the values of formulas 1 and 3 of above of above ±20 mV and formulas 2 and 4 approaching ±20 mV after day 6 storage. From the results of this study, it was suggested to choose the right kopyor varieties and optimize the VCO processing method in order to achieve the high levels of lauric acid in accordance with the standard. Furthermore, it is suggested to take longer acticity test at room temperature.

Conclusion

Kopyor Virgin Coconut Oil (VCO) was successfully formulated into a peel off gel mask with the concentration of 20% - 30% VCO and PVA at concentration of 8% to 10% and have shown antibacterial activity against *Propionibacterium acnes* ATCC 11827. Increased kopyor VCO levels from 20% to 30% and polyvinyl alcohol levels from 8% to 10% had no significant effect on antibacterial activity. Formula 1 which contained 8% PVA and 20% VCO was the optimum formula considering its pH, spreadability, zeta potential and antibacterial activity. For the development of formulas, it is recommended to produce peel off gel mask consisting of a minimum of 30% VCO and 10% PVA. Longer stability test is highly recommended to optimized the VCO peel-off mask.

Conflict of Interest

The authors declare no conflict of interest.

Authors' Declaration

The authors hereby declare that the work presented in this article is original and that any liability for claims relating to the content of this article will be borne by them.

Table 3: Particle Size and Polydispersity Index on Day 0 and 6

Day	Particle Size (nm)				Polydispersity Index			
	F1	F2	F3	F4	F1	F2	F3	F4
0	1126 ± 7.12	986.13 ± 22.81	723.47 ± 3.51	674.03 ± 13.58	0.450 ± 0.03	0.498 ± 0.01	0.412 ± 0.02	0.414 ± 0.02
6	1308.33 ± 26.41	1285.33 ± 26.13	1147 ± 1.63	732.77 ± 7.53	0.497 ± 0.03	0.518 ± 0.04	0.414 ± 0.02	0.384 ± 0.01

Acknowledgements

Authors would like to thank to Universitas Airlangga and Directorate General of Higher Education for grant (Grant No. 713/UN3.14/PT/2020) and Faculty of Pharmacy Universitas Airlangga for research support and facilities.

References

1. Titus S and Hodge J. Diagnosis and treatment of acne. Am Fam Physician. 2012; 86(8):734-740.
2. Norita and Malfasari E. Correlation between Acne Vulgaris and Teenager's Performance. J Keperawatan. 2017; 9(1):6-12.
3. Ramdani R and Sibero HT. Treatment for Acne Vulgaris. J Majority. 2015; 4(2):87-92.
4. Rahmi AH, Cahyanto T, Sujarwo T, Lestari RI. Antibacterial activity test of beluntas leaf extract (*Pluchea indica* Linn) LESS) against *Propionibacterium acnes* which causes acne. Thesis. Faculty of Sains and Teknologi UIN Sunan Gunung Djati Bandung. 2015; 9(1):141-161.
5. Nakatsuji T, Kao MC, Fang JY, Zouboulis CC, Zhang L, Gallo RL, Huang CM. Antimicrobial property of lauric acid against *Propionibacterium acnes:* therapeutic potential for inflammatory Acne Vulgaris. J Invest Dermatol. 2009; 129(10):2480-2488.
6. Sia CM, Yim HS, Lai CM. Commercial Virgin Coconut Oil: Assesment of Antimicrobial Potential. As J Food Ag-Ind. 2010; 3(6):567-579.
7. Susanto TD, Sujatno M, Kuswinarti, Yuwono HS. Effect of Virgin Coconut Oil Antibacterial on Methicillin Resistant Staphylococcus Aureus. Med. 2015; 4(8):274-281.
8. Santoso U, Kubo K, Ota T, Tadakoro T, Maekawa A. Nutrient Composition of Kopyor Coconuts (*Cocos nucifera* L.). Elsevier Sci Ltd, 1995; 57(2):299-304.
9. Agarwa RK and Bosco SJD. Extraction Processes of Virgin Coconut Oil. MOJ Food Process Technol. 2017; 4(2):54-56.
10. Dumancas G, Viswanath LCK, Leon AR, Ramasahayam S, Maples R, Koralege RH, Perera Undugodage DN, Langford J, Shakir A, Castles S. Health benefits of *Virgin Coconut Oil*. In: Vegetable Oil: Properties, Uses, and Benefits Chapter: 6. Nova Sci Pub Inc. 2016; 6:1-33.
11. Beringhs AO, Julia MR, Hellen KS, Rosane MB, Diva S. Green clay and aloe vera peel-off facial masks: response surface methodology applied to the formulation design. APPS Pharm Sci Tech. 2013; 14(1):445-455.
12. Andini T and Yusriadi Y. Optimization of Polyvinyl Alcohol Former Film and Propylene Glycol Humectant on Formula of Gel Peel-off Mask of *Cucurbita moschata Duchesne* as Antioxidant. Galenika J Pharm. 2017; 3(2):165-173.
13. Rowe RC, Sheskey PJ, Quinn ME. Handbook of Pharmaceutical Excipients, 6th Ed. London: Pharmaceutical Press. 2009; 564-565.
14. Aprilia N, Darma GCE, Lestari F. Formulation of Gel Peel-off Mask of Cymbopogon winteranus Jowitt Oil and Activity on *Staphylococus epidermidis*. Proceeding Pharm. 2016; 2(2):177-183.
15. Anisah MR. Physical stability of tretinoin nanoemulsion system compared to conventional emulsion system using *Virgin Coconut Oil*. Thesis. Faculty of Pharmacy, Universitas Airlangga. 2017; 1-20.
16. Shahtalebi MA, Gholam RA, Rahmani F, Shafiee F, Najafabadi AJ. Formulation of herbal gel of *Antirrhinum majus* extract and evaluation of its anti-*Propionibacterium acne* effect. Adv Biomed Press. 2018; 7:53.
17. Sandle T. Pharmaceutical Microbiology. Cambridge: Woodhead Publishing Limited, 2016; 47
18. Zettira NZ. Antibacterial activity of Rosella Water extract gel (*Hibiscus sabdariffa L.*) - HPMC 6000 against *Staphylococcus aureus* ATCC 25923. Thesis. Faculty of Pharmacy, Universitas Airlangga. 2016; 1-12.
19. Fitriani EW, Imelda E, Kornelis C, Avanti C. Characteristics and physical stability of type W/O microemulsion with various oil phases. Pharm Sci Res. 2016; 3(1):34.
20. Budiman A, Diah LA, Arif SWK, Insan S. Peel-off gel Formulation from Black Mulberries (*Morus nigra*) extracts anti-acne mask. Natl J Physiol Pharm Pharmacol. 2017; 7(9):987-994.
21. Mardiyadi E, Muttaqien SE, Setyawati DR, Rosidah I, Sriningsih. Preparation and application of chitosan nanoarticles as oral insulin delivery systems. Prosiding INSINAS MT-25. 2012; 25-30.
22. Novarianto H and Tulalo M. Lauric acid content of various coconut varieties as VCO raw material. Jurnal Litri. 2007; 13(1).
23. Barlina R. Potency of Kopyor Coconut Meat as an Ingredient of Healthy Food. Perspektif. 2021; 19(2):95-104.
24. Smaoui S, Hlima HB, Jarraya R, Kamoun NG, Ellouze R, Damak M. Cosmetic emulsion from *Virgin Coconut Oil*: formulation and bio-physical evaluation. Afr J Biotechnol. 2012; 11(40):9664-9671.
25. Ansel HC. Pharmaceutical dosage forms (4th Ed.). Jakarta: UI Press. 2005; 1260-1309.
26. Yani S, Aladin A, Wiyani L, Modding B. Evaluation of viscosity and pH on emulsions of *Virgin Coconut Oil* beverages. IOP Conf. Series: EES 175. 2018; 1-7.
27. Affianti HP and Murrukmihadi M. Influence of Variation Levels HPMC as Gelling Agent againts Physical Properties and Antibacterial Activity of Preparation Gel Ethanolic Extract of Basil Leaves. Majalah Farmaseutik. 2015; 11(2):1-9.
28. Priani SE, Irawati I, Darma GCE. Mangosteen Fruit Skin Peel-Off Gel Mask Formulation (*Garcinia mangostana Linn.*). IJPST. 2015; 2(3):90-95.
29. Iradhati AH and Jufri M. Formulation and physical stability test of griseofulvin microemulsion gel. Int J Appl Pharm. 2017; 9:23-26.
30. WHO. Annex 10: Stability testing of active pharmaceutical ingredients and finished pharmaceutical products. Accessed from https://www.ich.org/fileadmin/Public_Web_Site/ICH_Products/Guidelines/Quality/Q1F/Stability_Guideline_WHO_2018. WHO. 2018.
31. Nidhin M, Indumathy R, Sreeram KJ, Nair BU. Synthesis of iron systems containing Cyclodextrins to Improve the solubility of 2 model hydrophobic drugs. AAPS Pharm Sci Tech. 2008; 4(1):10.
32. Wisniewska M, Ostolska I, Karpisz KS, Chibowski S, Terpilowski K, Gun'ko VM, Zarko VI. Investigation of the *Poly Vinyl Alcohol* stabilization mechanism and adsorption properties on the surface of ternary mixed nanooxide AST 50 (Al_2O_3-SiO_2-TiO_2). J Nanopart Res. 2015; 17:12.

Tropical Journal of Natural Product Research

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	H-INDEX
Nigeria Universities and research institutions in Nigeria	Biochemistry, Genetics and Molecular Biology Biochemistry Molecular Medicine Chemistry Analytical Chemistry Medicine Complementary and Alternative Medicine Pharmacology, Toxicology and Pharmaceutics Drug Discovery Pharmaceutical Science Pharmacology	Faculty of Pharmacy, University of Benin	5

PUBLICATION TYPE	ISSN	COVERAGE	INFORMATION

SCOPE

The Tropical Journal of Natural Product Research is open access, peer-reviewed international journal aimed at making important contributions in the field of Natural Product Research, Pharmaceutical and Natural Sciences. The journal covers all aspects of Pharmaceutical research, chemistry and biochemistry of naturally occurring compounds, ethnomedicine, ethnopharmacology, pharmacognosy, biomedical research, biotechnology and related disciplines. The journal welcome submissions from a broad spectrum of scientific endeavour involving biological evaluation of natural substances of plant, microbial and animal origin against different disease targets, processes or therapeutic strategies that can lead to or assist in the prevention and management of chronic and infectious diseases, clinical therapeutics, Isolation and characterization of metabolites, structure elucidation, synthesis and experimental biosynthesis of natural Product as well as developments of methods in these areas. Research papers in the fields of chemistry-biology boundary, e.g. fermentation chemistry, plant tissue culture investigations etc. are also welcomed. Although the journal focuses mainly on original research articles, timely, concise and focused reviews on recent progress in active areas of natural Product is also encouraged.

Quartiles

FIND SIMILAR JOURNALS

1
Pharmacognosy Journal
IND
76%
similarity

2
Journal of Traditional and Complementary Medicine
NLD
76%
similarity

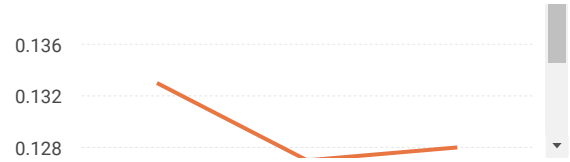
3
Pharmacologyonline
ITA
75%
similarity

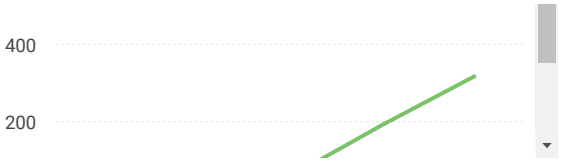
4
Pharmacognosy
IND
73
simila

Submit Your Manuscript With Us

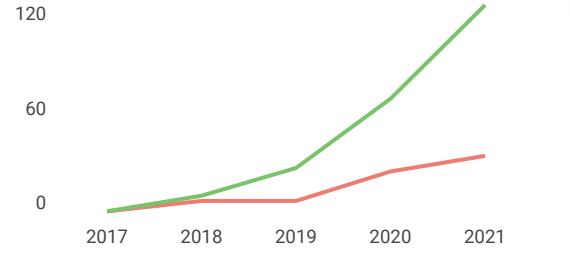
Open

Hindawi

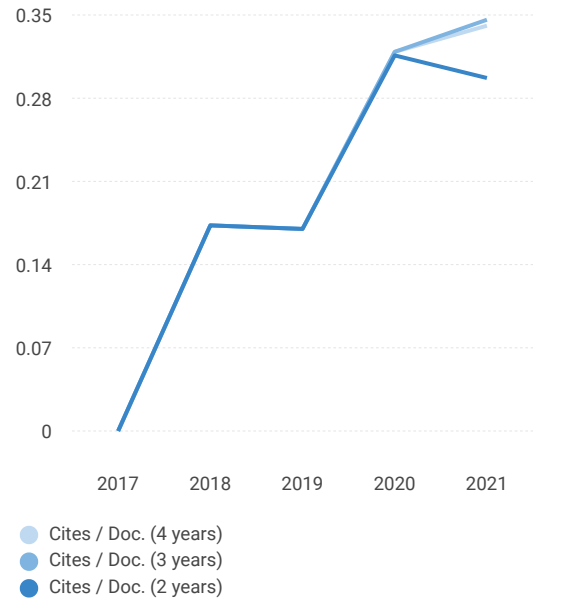




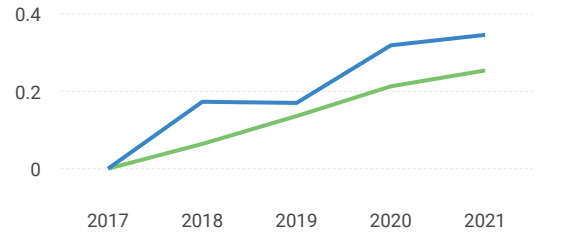
Total Cites Self-Cites



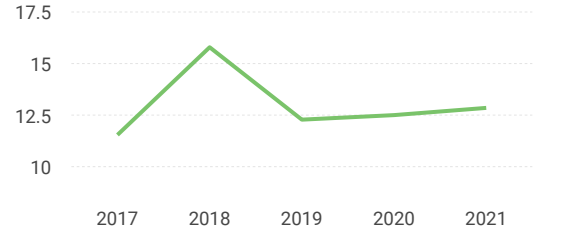
Citations per document



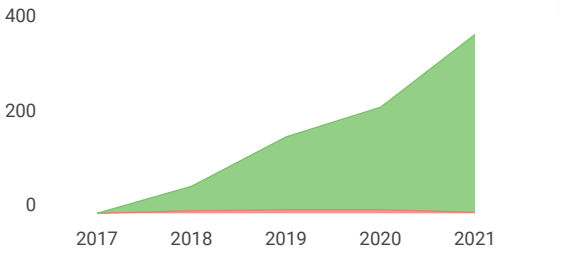
External Cites per Doc Cites per Doc



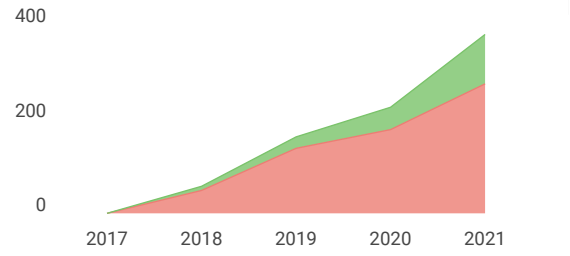
% International Collaboration



Citable documents Non-citable documents



Cited documents Uncited documents



← Show this widget in your own website

Just copy the code below and paste within your html code:

<a href="https://www.scimag

Metrics based on Scopus® data as of April 2022

O **Oumaima** 7 months ago

Hello,

My manuscript was accepted and I paid the publication fee. I sent a lot of emails to the editor of the journal, but haven't received any response. It's normal?

reply

N **Nawal** 1 month ago

Please, I want to ask you has your manuscript been published in this journal? as I have the same problem now

SCImago Team

Melanie Ortiz 7 months ago

Dear Oumaima,
Thank you for contacting us. Unfortunately, SCImago cannot help you with your request.SJR is committed to help decision-making through scientometric indicators.
Best Regards, SCImago Team

A **amr ismail** 10 months ago

Introduction

with increased mortality and adverse neurological outcomes. It has been suggested that this myocardial dysfunction, or stunning, is due to ischemia and/or necrosis(So You et al., 2020).
Cardiac biomarkers are being increasingly incorporated into clinical trials as indicators of myocardial strain. Furthermore, they can possibly be used to guide therapy and improve outcome. They are potential tools in the diagnosis and treatment of neonatal disease that is complicated by circulatory compromise (Daniel et al., 2017).
Previous studies in neonates have used creatine kinase isoforms as Biochemical markers of myocardial injury. However, these markers have been largely discarded because gestation, sex, mode of delivery, and birth weight all affect creatine kinase activity (Clark et al., 2016)
Cardiac troponin T (cTnT) is a regulatory contractile protein whose detection in the circulation has been shown to be a specific and sensitive marker for ischemic myocardial cell injury both in adult and pediatric populations (Thygesenet al., 2017).
Specific forms of the three troponin subunits T, C, and I exist in different muscle types. Cardiac specific troponins T and I have become established as the best biochemical markers for myocardial necrosis (Nikhileshet al., 2015).
They start to increase two hours after myocardial infarction, and concentrations can remain raised for up to two weeks after a full thickness infarct (Nikhileshet al., 2015).
Cardiac troponin T is detectable in the blood of many healthy neonates, but no relation with important basic and clinical variables was found. Sick infants have significantly higher concentrations than healthy infants. The variations in cardiac troponin T concentration were significantly associated with oxygen requirement or the use of inotropic support in a regression model. Cardiac troponin T may be a useful marker of neonatal and cardiorespiratory morbidity (Clark et al., 2016)

reply

SCImago Team

Melanie Ortiz 10 months ago

Dear Ismael,
Thank you for contacting us.
We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.
Unfortunately, we cannot help you with your request, we suggest you visit the journal's homepage (See submission/author guidelines) or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, SCImago Team

P **paula** 1 year ago

will the articles published in this journal in 2021 are indexed in scopus ?

reply

Dear Paula,
Thank you for contacting us. A paper will be considered as Scopus indexed as long as it has been published in the same period in which Scopus has indexed the journal. For this reason, we always recommend to consult the Scopus database directly to see the current status of a journal.
Best Regards, SCImago Team

S **sanae** 1 year ago

I need to know if this journal is indexed in Scopus.

reply

M **Mohammed KARA** 1 year ago

yes is indexed

SCImago Team

Melanie Ortiz 1 year ago

Dear Sanae,
Thank you very much for your comment.
All the metadata have been provided by Scopus /Elsevier in their last update sent to SCImago, including the Coverage's period data. The SJR for 2020 has been released on 17 May 2021. We suggest you consult the Scopus database directly to see the current index status as SJR is a static image of Scopus, which is changing every day.
Best Regards, SCImago Team

D **Dr John A. Udobang** 1 year ago

I sent in a manuscript for publication. I don't seem to find how to follow up its progress.

reply

SCImago Team

Melanie Ortiz 1 year ago

Dear Dr John, thank you very much for your comment. Unfortunately, we cannot help you with your request, we suggest you contact the journal's editorial staff so they could inform you more deeply. Best Regards, SCImago Team

reply

SCImago Team

Melanie Ortiz 1 year ago

Dear Abiodun,
thank you very much for your comment. SJR has been updated on 11 June 2020 (it is updated only once a year).
Each year, Scopus provides us an update of their database and, according to that information, the scientometric indicators are calculated. The annual data's update can change the journal's quartile.
Best Regards, SCImago Team

Leave a comment

Name

Email
(will not be published)

I'm not a robot
reCAPTCHA
Privacy - Terms

Submit

The users of Scimago Journal & Country Rank have the possibility to dialogue through comments linked to a specific journal. The purpose is to have a forum in which general doubts about the processes of publication in the journal, experiences and other issues derived from the publication of papers are resolved. For topics on particular articles, maintain the dialogue through the usual channels with your editor.

Developed by: SCImago

Powered by: Scopus

Follow us on @ScimagoJR

EST MODUS IN REBUS
Horatio (Satire 1,1,106)

Edit Cookie Consent