

**LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : JURNAL ILMIAH C2**

Judul Publikasi Ilmiah (Artikel) : Synthesis of A Novel Carrier Compound Thiazioethyl Methyl Eugenoyacetate from Eugenol and Its Use in the Bulk Liquid Membrane Technique

Jumlah Penulis : 5 orang

Status Pengusul : penulis pertama/utama

Identitas Jurnal Ilmiah a. Nama Jurnal Ilmiah: Indonesian Journal of Chemistry

b. Nomor ISBN /ISSN : 2042-4876

c. Volume, Nomor, Bulan, Tahun : Volume18 (1) februari 2018

d. Penerbit : Departemen Kimia FMIPA UGM

e. DOI artikel (jika ada) : <https://doi.org/10.22146/ijc.25075>

f. Alamat web jurnal : <https://jurnal.ugm.ac.id/ijc/article/view/25075>

g. Terindeks di SCOPUS (category : Q3), Scimago journal Rank (powered by SCOPUS), : SciFinder - Powered by Chemical Abstract Services (CAS), ESCI - Emerging Sources Citation Index - Powered by Web of Science, DOAJ - Directory of Open Access Journal, ROAD - the Directory of Open Access scholarly Resources, Google Scholar, CrossRef, JournalTOCs - scholarly journal Tables of Contents (TOCs), BASE - Bielefeld Academic Search Engine, SINTA (Category : Sinta1=-1), Indonesian Publication Index (IPI), Indonesia One Search, Indonesian Scientific Journal Database (ISJD)

e. Jumlah Halaman : 6 (121-126)

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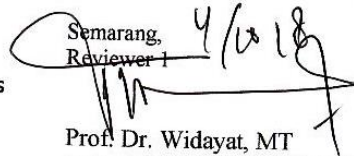
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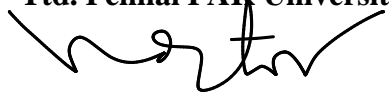
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NIP. 19720906 199803 1001

Nilai

Rata-rata Peer Review= 20,25

Nilai PAK Universitas = 20,25

Ttd. Penilai PAK Universitas



Prof. Dr. Hadiyanto, ST, MSc

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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
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h. Jumlah Halaman : 6 (121-126)

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a. Kelengkapan unsur isi artikel (10%)	4			3,5
b. Ruang lingkup dan kedalaman pembahasan (30%)	12			9,5
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	12			9,5
d. Kelengkapan unsur dan kualitas penerbit (30%)	12			10
Total = (100 %)	40			33,5
Nilai Pengusul =				

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2. Ruang lingkup dan kedalaman pembahasan:	: Artikel ini menyajikan hasil penelitian mengenai sintesis membran TMEA dan diterapkan dlm proses pemisahan logam berat Cu (2+), Cd (2+) dan Cr (3+) sehingga masih dalam lingkup jurnal kimia, pendidikan kimia, teknik kimia dan kila terapan. Tidak dijelaskan tujuan penulisan sehingga tidak bisa diambil kesimpulan yang tepat. Hasil penelitian dibahas kurang mendalam walaupun didukung dg pustaka yang baik. Tetapi terdapat kecenderungan untuk hanya mengulangi hal-hal yang muncul di prosedur percobaan (skor = 9,5).
3. Kecukupan dan kemutakhiran data/informasi dan metodologi	: Pustaka yang digunakan pada umumnya sudah tua/lebih dari 10 tahun (ada 9 dari 22 pustaka). Pustaka yang digunakan dalam pembahasan kurang dari 50%. Bahkan pada metodologi justru tidak mendasarkan pada pustaka (skor= 9).
4. Kelengkapan unsur dan kualitas terbitan:	: Jurnal Indones. J. Chem. tergolong dalam Q3 Scopus dan h- indeks 7 ketika artikel ini terbit. Penggunaan Bahasa Inggris dlm jurnal ini kurang begitu baik. Jurnal diterbitkan oleh Departemen Kimia FMIP UGM dengan Editor berasal dari 8 negara. Penulis didominasi dari Indonesia (20 artikel dari 25 artikel). Terdapat 15-20 artikel untuk sekali terbitan. Judul dan gambar pada Figure 2 saling berhimpitan. (skor= 10).

Semarang,

Reviewer 2


Prof. Dr. Andri Cahyo Kumoro, ST, MT.

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Indonesian Journal of Chemistry [Open Access](#)
Volume 18, Issue 1, 2018, Pages 121-126

Synthesis of a novel carrier compound thiazoethyl methyl eugenoxycetate from eugenol and its use in the bulk liquid membrane technique [\(Article\)](#)

[\(Open Access\)](#)

Djunaidi, M.C. ✉, Wibawa, P.J., Murti, R.H. 👤

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Department of Chemistry, Faculty of Science and Mathematics, Diponegoro University, Jl. Prof. H. Soedarto, S.H., Tembalang, Semarang, 50275, Indonesia

Abstract

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Research into the synthesis and use of a novel carrier compound, thiazoethyl methyl eugenoxycetic acid (TMEAA) for selective transport of Cu(II), Cd(II) and Cr(III) metal ions in the bulk liquid membrane (BLM) technique was conducted. TMEAA was synthesized from eugenol by acidification into eugenoxycetic acid and subsequently esterified using 4-methyl-5-thiazoethanol. Analysis of the result was performed using GC-MS and FTIR. The TMEAA obtained was liquid, viscous, blackish-brown and fragrant, with a yield of 88%. This compound was soluble in benzene and chloroform but insoluble in methanol. The GC-MS analysis showed the presence of a single peak, with a retention time of 26.5 min, while the disappearance of vibration mode at 1727 cm^{-1} was attributed to acid absorption and the FTIR spectrum indicated that formation of an ester group had occurred. TMEAA was used as a carrier compound in the BLM technique to transport Cu(II), Cd(II) and Cr(III), using chloroform as a solvent. The results showed that TMEAA was more selective for Cu(II) and Cd(II) than Cr(III). Moreover, the research proved that N and S groups of TMEAA were selective for Cu(II) and Cd(II). © 2018, Gadjah Mada University. All rights reserved.

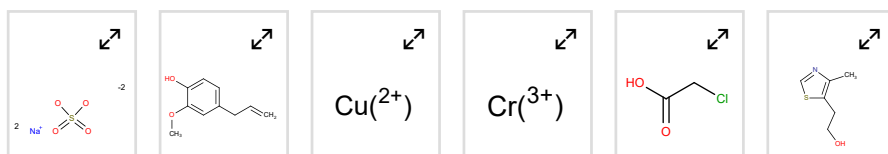
SciVal Topic Prominence ⓘ

Topic: Liquid membranes | Extraction | Membrane ELM

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Bulk Liquid Membrane (BLM) Eugenol Selective transport Thiazoethyl methyl eugenoxycetic acid

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Djunaidi, M.C. , Lusiana, R.A. , Pardoyo (2019) *IOP Conference Series: Materials Science and Engineering*

Synthesis and characterization of co-edaf and its application test as a carrier membrane for phenol transport using polymer inclusion membrane (PIM)

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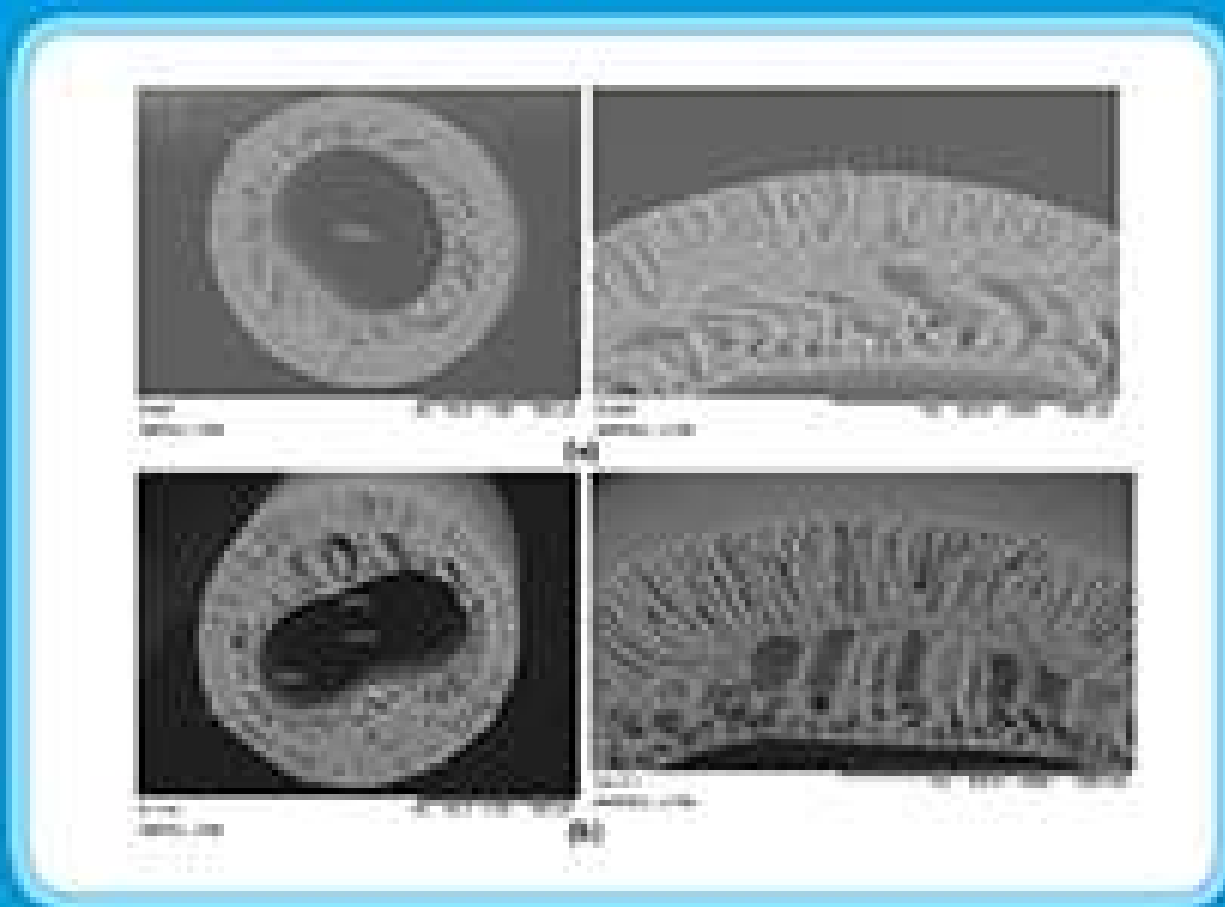
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Table of Contents

Articles

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>The Modification of PVDF Membrane via Crosslinking with Chitosan and Glutaraldehyde as the Crosslinking Agent</p> <p><i>Romaya Sitha Silitonga, Nurul Widiastuti, Juhana Jaafar, Ahmad Fauzi Ismail, Muhammad Nidzhom Zainol Abidin, Ihsan Wan Azelee, Mahesan Naidu</i></p> <p> 10.22146/ijc.25127 Abstract views : 2053 PDF views : 2785</p> | 1-6 |
| <p>Physical Mixture Interaction of Acetaminophenol with Naringenin</p> <p><i>Normyzatul Akmal Abd Malek, Hamizah Mohd Zaki, Mohammad Noor Jalil</i></p> <p> 10.22146/ijc.26732 Abstract views : 945 PDF views : 1104</p> | 18-25 |
| <p>An Ellagic Acid Derivative and Its Antioxidant Activity of Stem Bark Extracts of <i>Syzygium polycephalum</i> Miq. (Myrtaceae)</p> <p><i>Tukiran Tukiran, Andika Pramudya Wardana, Nurul Hidayati, Kuniyoshi Shimizu</i></p> <p> 10.22146/ijc.25467 Abstract views : 1921 PDF views : 2330</p> | 26-34 |
| <p>One-Pot Eco-Safe Saccharin-Catalyzed Procedure for Expedient and Convenient Synthesis of Dihydropyrano[2,3-c]pyrazole, Tetrahydrobenzo[b]pyran and Pyrano[2,3-d]pyrimidinone Scaffolds as a Green and Versatile Catalyst</p> <p><i>Farzaneh Mohamadpour, Mojtaba Lashkari, Nourallah Hazeri</i></p> <p> 10.22146/ijc.28450 Abstract views : 1486 PDF views : 1529</p> | 7-17 |
| <p>Liquid Chromatography Mass Spectrometry (LC-MS) Fingerprint Combined with Chemometrics for Identification of Metabolites Content and Biological Activities of <i>Curcuma aeruginosa</i></p> <p><i>Dewi Anggraini Septaningsih, Latifah Kosim Darusman, Farit Mochamad Afendi, Rudi Heryanto</i></p> <p> 10.22146/ijc.25456 Abstract views : 2471 PDF views : 3914</p> | 43-52 |
| <p>Cytotoxic Triterpenoids from the Stembark of <i>Aglaia argentea</i> (Meliaceae)</p> <p><i>Ace Tatang Hidayat, Kindi Farabi, Desi Harneti, Nurlelasari Nurlelasari, Rani Maharani, Ida Nurfarida,</i></p> | 35-42 |

ARTICLE IN PRESS

List of the accepted articles for future issues.

Focus & Scope

Author Guidelines

Author Fees

Online Submission

Publication Ethics

Plagiarism Policy

Editorial Board

Peer Reviewers

Order Journal

Visitor Statistics

USER

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JOURNAL CONTENT

Search

Search Scope

All

Search

Browse

▶ By Issue

▶ By Author

▶ By Title

▶ Other Journals

INFORMATION

▶ For Readers

▶ For Authors

▶ For Librarians

KEYWORDS

HPLC QSAR TIO2

adsorption

antioxidant catalst

Unang Supratman, Yoshihito Shiono

 10.22146/ijc.25052  Abstract views : 1316 |  views : 1452
A Green Synthesis of a Novel Calix[4]Resorcinarene from 7-Hydroxycitronellal Using Microwave Irradiation

53-59

Ratnaningsih Eko Sardjono, Iqbal Musthapa, Iis Rosliana, Fitri Khoerunnisa, Galuh Yuliani

 10.22146/ijc.25466  Abstract views : 1384 |  views : 1533
Structure-Activity Relationship Study on the Ethyl *p*-Methoxycinnamate as an Anti-Inflammatory Agent

60-65

Ismiarni Komala, Supandi Supandi, Nurhasni Nurhasni, Ofa Suzanti Betha, Eka Putri, Syarifatul Mufidah, Muhammad Fikry Awaludin, Mida Fahmi, Muhammad Reza, Nurkhayati Putri Indriyani

 10.22146/ijc.26162  Abstract views : 1513 |  views : 1802
Antidiabetic Activities and Identification of Chemical Compound from Samama (*Anthocephalus macrophyllus* (Roxb) Havil)

66-74

Laela Nur Anisah, Wasrin Syafii, Gustan Pari, Rita Kartika Sari

 10.22146/ijc.25492  Abstract views : 1472 |  views : 2008
The Effect of *Pseudomonas aeruginosa* Addition on 1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane (DDT) Biodegradation by Brown-rot Fungus *Fomitopsis pinicola*

75-81

Atmira Sariwati, Adi Setyo Purnomo

 10.22146/ijc.25158  Abstract views : 1152 |  views : 1324
The Physico-Mechanical Properties and Release Kinetics of Eugenol in Chitosan-Alginate Polyelectrolyte Complex Films as Active Food Packaging

82-91

Baiq Amelia Riyandari, Suherman Suherman, Dwi Siswanta

 10.22146/ijc.26525  Abstract views : 1388 |  views : 1536
Synthesis and Characterization of Chitosan Linked by Methylene Bridge and Schiff Base of 4,4'-Diaminodiphenyl Ether-Vanillin

92-101

Ahmad Fatoni, Poedji Loekitowati Hariani, Hermansyah Hermansyah, Aldes Lesbani

 10.22146/ijc.25866  Abstract views : 2173 |  views : 2742
Synthesis of Chalcone Derivatives and Their *in vitro* Anticancer Test Against Breast (T47D) and Colon (WiDr) Cancer Cell Line





102-107

Chairil Anwar, Yogo Dwi Prasetyo, Sabirin Matsjeh, Winarto Haryadi, Eti Nurwening Sholikhah, Nendrowati Nendrowati

 10.22146/ijc.26864  Abstract views : 1544 |  views : 2212
Synthesis and Kinetic Study of the Urea Controlled Release Composite Material: Sodium Lignosulfonate from Isolation of Wood Sawdust-Sodium Alginate-Tapioca

108-115

Arif Cahyo Imawan, Yehezkiel Steven Kurniawan, Muhammad Fernadi Lukman, Jumina Jumina, Triyono Triyono, Dwi Siswanta

 10.22146/ijc.26597  Abstract views : 1681 |  views : 1109 |  views : 1104
A New Thiourea Compound as Potential Ionophore for Metal Ion Sensor

116-120

Fatimatul Akma Awang Ngah, Emma Izzati Zakariah, Imran Fakhar, Nurul Izzaty Hassan, Lee Yook Heng, Bohari Yamin, Siti Aishah Hasbullah

 10.22146/ijc.27078  Abstract views : 1251 |  views : 1462
Synthesis of A Novel Carrier Compound Thiazoethyl Methyl Eugenoxycetate from Eugenol and Its Use in the Bulk Liquid Membrane Technique




121-126

Muhammad Cholid Djunaidi, Pratama Jujur Wibawa, Ratna Hari Murti

 10.22146/ijc.25075  Abstract views : 1345 |  views : 1432
Improvement of Cycling Performance of Na₂/3Co₂/3Mn₁/3O₂ Cathode by PEDOT/PSS Surface Coating for Na Ion Batteries




127-136

Yatim Lailun Ni'mah, Ju Hsiang Cheng, Ming Yao Cheng, Wei Nien Su, Bing Joe Hwang

 10.22146/ijc.24893  Abstract views : 1452 |  views : 1554
Spatial Distribution of Heavy Metals in the Surface Sediments of the Southern Coast of Pacitan, Indonesia

137-144

Defri Yona, Mochamad Arif Zainul Fuad, Nurin Hidayati

 10.22146/ijc.22400  Abstract views : 966 |  views : 1422
Activated Carbon from Spent Brewery Barley Husks for Cadmium Ion Adsorption from Aqueous Solution

145-152

Illesanmi Osasona, Kayode Aiyedatiwa, Jonathan Johnson, Oluwabamise Lekan Faboya

 10.22146/ijc.22422  Abstract views : 1180 |  views : 1602

environmental safety

characterization chitosan
eugenol extraction fly ash heavy
metals immobilization kinetics
methylene blue molecular
docking selectivity silica
synthesis transesterification
zeolite

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CURRENT ISSUE

- Synthesis, Radiochemical Purity Control and Stability of Scandium-46-1,4,7-triazacyclononane-1,4,7-triacetic acid (⁴⁶Sc-NOTA)** 153-158
Duyeh Setiawan, Iwan Hastiawan, Asri Nurul Bashiroh
 [10.22146/ijc.24467](https://doi.org/10.22146/ijc.24467)  Abstract views : 1237 |  views : 1420
- Synthesis of Zeolite from Sugarcane Bagasse Ash Using Cetyltrimethylammonium Bromide as Structure Directing Agent** 159-165
Sriatun Sriatun, Taslimah Taslimah, Linda Suyati
 [10.22146/ijc.22197](https://doi.org/10.22146/ijc.22197)  Abstract views : 1195 |  views : 1956
- Hydrocracking of α -Cellulose Using Co, Ni, and Pd Supported on Mordenite Catalysts** 166-172
Wega Trisunaryanti, Triyono Triyono, Ria Armunanto, Lathifah Puji Hastuti, Desinta Dwi Ristiana, Resi Vita Ginting
 [10.22146/ijc.26491](https://doi.org/10.22146/ijc.26491)  Abstract views : 1792 |  views : 1890
- Density Functional Theory (DFT) and Natural Bond Orbital (NBO) Analysis of Intermolecular Hydrogen Bond Interaction in "Phosphorylated Nata De Coco - Water"** 173-178
Sitti Rahmawati, Cynthia Linaya Radiman, Muhamad Abdulkadir Martoprawiro
 [10.22146/ijc.25170](https://doi.org/10.22146/ijc.25170)  Abstract views : 1188 |  views : 1897
- Molecular Docking Analysis of Ginger Active Compound on Transient Receptor Potential Cation Channel Subfamily V Member 1 (TRPV1)** 179-185
Fifteen Aprila Fajrin, Agung Endro Nugroho, Rina Susilowati, Arief Nurrochmad
 [10.22146/ijc.28172](https://doi.org/10.22146/ijc.28172)  Abstract views : 1086 |  views : 1601
- The Role of E27-K31 and E56-K10 Salt-Bridge Pairs in the Unfolding Mechanism of the B1 Domain of Protein G** 186-193
Tony Ibnu Sumaryada, Kania Nur Sawitri, Setyanto Tri Wahyudi
 [10.22146/ijc.23934](https://doi.org/10.22146/ijc.23934)  Abstract views : 1115 |  views : 1471

Indonesian Journal of Chemistry (ISSN 1411-9420 / 2460-1578) - Chemistry Department, Universitas Gadjah Mada, Indonesia.

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One-Pot Eco-Safe Saccharin-Catalyzed Procedure for Expedient and Convenient Synthesis of Dihydropyrano[2,3-c]pyrazole, Tetrahydrobenzo[b]pyran and Pyrano[2,3-d]pyrimidinone Scaffolds as a Green and Versatile Catalyst

Farzaneh Mohamadpour¹, Mojtaba Lashkari^{2,*}, and Nourallah Hazeri¹

¹Department of Chemistry, Faculty of Science, University of Sistan and Baluchestan,
P.O. Box 98135-674 Zahedan, Iran

²Faculty of Science, Velayat University, Iranshahr, Iran

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ABSTRACT

A green and facile saccharin-catalyzed procedure is developed for the one-pot convenient synthesis of dihydropyrano[2,3-c]pyrazole, tetrahydrobenzo[b]pyran and pyrano[2,3-d]pyrimidinone scaffolds via multi-component tandem Knoevenagel cyclocondensation reaction. This procedure has the chief advantages of green, inexpensive and readily available catalyst, high atom-economy, high to quantitative yields and the reaction procedure is mild and involves facile workup procedure to obtain the desired products in short reaction times.

Keywords: green procedures; saccharin; dihydropyrano[2,3-c]pyrazoles; tetrahydrobenzo[b]pyrans; pyrano[2,3-d]pyrimidinones

ABSTRAK

Metode sintesis yang mudah dan green, yakni sintesis one-pot terkatalisis sakarin, telah dikembangkan untuk menghasilkan kerangka dihydropyrano[2,3-c]pyrazole, tetrahydrobenzo[b]pyran and pyrano[2,3-d]pyrimidinone melalui reaksi multikomponen beruntun yang terdiri dari reaksi Knoevenagel dan siklokondensasi. Metode ini memiliki kelebihan yaitu bersifat green, tidak mahal, katalis mudah didapat, dan atom ekonomi yang tinggi. Selain itu, reaksi ini dapat dilakukan pada kondisi ringan dan serta memiliki prosedur work-up yang mudah, sehingga berbagai senyawa target dapat dihasilkan dalam waktu reaksi yang singkat dengan rendemen yang tinggi.

Kata Kunci: metode sintesis green; sakarin; dihydropyrano[2,3-c]pyrazoles; tetrahydrobenzo[b]pyrans; pyrano[2,3-d]pyrimidinones

INTRODUCTION

Multicomponent reactions (MCRs) are processes “in which more than two educts directly get converted into their products by one-pot reaction” [1-2]. MCRs [3-7] play an important role in modern organic chemistry, because they generally exhibit higher atom economy and selectivity as well as produce fewer by-products compared to classical multistep synthesis [8]. The development of environmentally friendly catalysts and solvents for organic reactions is one of the major minatory factors to environmental and human health. Thus, removal or reduction of the use of non-volatile solvents and non-metallic is one of the major goals of green chemistry.

Structures containing the pyran derivatives have attracted synthetic organic chemists and biochemists because of their pharmaceutical and biological activities. Literature reports have already established pyrans as

Chk1 kinase inhibitory activity [9], analgesic properties [10], anticancer [11], vasodilatory activities [12], spasmolytic [13] antihypertensive, hepatoprotective, cardiogenic [14], vasodilator [15], anti-leukemic [16-17], emetic [18], anti-anaphylactic activities [19], diuretic [20], anti-alzheimer [21].

Because of the above mentioned applications, many methods using different types of catalysts are reported for the preparation of these compounds which of them ZrO₂ NPs [22], choline chloride/Urea deep [23], isonicotinic [24], molecular sieves [25], meglumine [26], CAPB [27], L-proline/KF-alumina [28], CTACl [29], lipase [30], CaHPO₄ [31], SiO₂ NPs [32], Glycerol [33], SBPPSP [34], DBSA [35], NH₄Al(SO₄)₂•12H₂O [36], NH₄H₂PO₄/Al₂O₃ [37], ACoPc-MNPs [38], ZnO NPs [39], Fe₃O₄@SiO₂-imid-PMA [40], DABCO-based ionic liquids [41], L-proline [42], Iron ore pellet [43], nano-sawdust-OSO₃H [44], Al-HMS-20 [45], TSA/B(OH)₃ [46], Mn/ZrO₂ [47], Green cellulose-based nanocomposite [48],

* Corresponding author.
Email address : m.lashkari@velayat.ac.ir

An Ellagic Acid Derivative and Its Antioxidant Activity of Chloroform Extract of Stem Bark of *Syzygium polycephalum* Miq. (Myrtaceae)

Tukiran^{1,*}, Andika Pramudya Wardana¹, Nurul Hidayati¹, and Kuniyoshi Shimizu²

¹Department of Chemistry, Faculty of Mathematics and Natural Sciences, Universitas Negeri Surabaya, Jl. Ketintang, Surabaya 60231, East Java, Indonesia

²Department of Forests and Forest Products Sciences, Faculty of Agriculture, Kyushu University, Fukuoka 812-8581, Japan

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ABSTRACT

The investigation of the *Syzygium polycephalum* Miq. (Myrtaceae) aimed to assess the phytochemical contents and antioxidant activity of the chloroform fraction. In this study, the fraction was obtained from methanol extract of *S. polycephalum* stem bark partitioned by chloroform. An ellagic acid derivative was successively isolated from the chloroform fraction. The molecular structure of isolated compound was elucidated and established as 3,4,3'-tri-O-methylellagic acid through extensive spectroscopic studies including UV-Vis, FTIR, NMR and LC-MS analyses and by comparison with literature data. The finding of the isolated compound is the first time from the plant, although the isolated compound previously have been found in the other *Syzygium* species such as *S. cumini* together with ellagic acid and 3,3'-di-O-methylellagic acid. The chloroform fraction, isolated compound, and vitamin C showed antioxidant activity against 2,2'-diphenyl-1-picrylhydrazyl (DPPH) with IC₅₀ value of 163.6, 72.1, and 11.5 µg/mL, respectively.

Keywords: antioxidant; ellagic acid derivative; Myrtaceae; *Syzygium polycephalum*

ABSTRAK

Penelitian pada tumbuhan *Syzygium polycephalum* (Myrtaceae) ini bertujuan untuk mengetahui kandungan fitokimia dan sifat antioksidannya dari fraksi kloroform. Dalam penelitian ini, fraksi kloroform diperoleh dari ekstrak metanol kulit batang tumbuhan *S. polycephalum* yang dipartisi oleh pelarut kloroform. Suatu senyawa turunan asam elagat telah berhasil diisolasi dari fraksi kloroform. Struktur senyawa hasil isolasi tersebut dielusidasi melalui kajian spektroskopi (UV-Vis, FTIR, NMR, dan LC-MS) dan juga melalui perbandingan dengan data literatur, dan ditetapkan sebagai asam 3,4,3'-tri-O-metilelagat. Penemuan senyawa hasil isolasi ini merupakan pertama kalinya dari tumbuhan tersebut, meskipun sebelumnya senyawa ini juga telah ditemukan pada tumbuhan *Syzygium* lainnya, yakni *S. cumini* bersama dengan asam elagat dan asam 3,3'-di-O-metilelagat. Fraksi kloroform, senyawa hasil isolasi, dan vitamin C telah menunjukkan aktivitas antioksidan terhadap 2,2'-diphenyl-1-picrylhydrazyl (DPPH) dengan nilai IC₅₀ masing-masing adalah 163,6; 72,1; dan 11,5 µg/mL.

Kata Kunci: antioksidan; Myrtaceae; *Syzygium polycephalum*; turunan asam elagat

INTRODUCTION

Syzygium is a genus in the Myrtaceae family that includes a number of popular species cultivated for their many purposes such as colorful, edible and fleshy fruit. The genus name *Syzygium* is derived via Latin from the Greek word 'syzygos', meaning yoked together, possibly referring to the paired leaves [1]. *Syzygium*, the genus of flowering plants, is one of the important genera in Myrtaceae family, mostly distributed in the tropical and sub-tropical region of the world, with the greatest diversity of species taking place in South East Asia such

as Indonesia, Malaysia and also in East India. It is represented by around 140 genera and 1100 species [2].

Recent studies focusing on the exploitation of natural compounds from *Syzygium* species for medicinal purposes have drawn much attention to the effective extraction of the desired bioactive ingredients from natural products. On basis of literature study, phytochemical studies on *Syzygium* species have led to the identification and isolation of main compounds such as phenolic compounds (e.g. eugenol, eugenol acetate), and β-caryophyllene found in *S. aromaticum* [3]. The compound had been also found in *S.*

* Corresponding author.
Email address : tukiran@unesa.ac.id

Physical Mixture Interaction of Acetaminophenol with Naringenin

Normyzatul Akmal Abd Malek^{1,2}, Hamizah Mohd Zaki^{1,2,*}, and Mohammad Noor Jalil¹

¹Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, 40000, Shah Alam, Selangor, Malaysia

²Atta Ur Rahman Institute for Natural Product Discovery, Universiti Teknologi MARA, Puncak Alam, Bandar Puncak Alam, 42300, Selangor, Malaysia

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ABSTRACT

The interaction of Active Pharmaceutical Ingredient (API) with other compounds will affect drugs stability, toxicity, modified dissolution profiles or may form a new compound with the different crystal structure. Acetaminophenol (APAP), the most common drug used widely (also known as Panadol) was mixed with Naringenin (NR) to glance for a new phase of interactions leading to new compound phase. The amide-acid supramolecular heterosynthon; N-H...O interaction between acid and the respective base were observed in the APAP-NR mixture blends. The interaction was prepared by the binary interaction from neat grinding and liquid-assisted grinding techniques at a different stoichiometry of binary mixture ratio of APAP-NR which were 1:1, 1:2 and 2:1 molar ratio. The interaction was estimated using Group Contribution Method (GCM) and physicochemical properties were characterized by Attenuated Total Reflectance Fourier Transform Infrared (ATR-FTIR), powder X-ray diffraction (PXRD) and Differential Scanning Calorimetry (DSC) analysis. The GCM calculation gave good interaction strength at 212.93 MPa^{1/2}. The ATR-FTIR, DSC and PXRD results obtained revealed an interaction with new phase formed.

Keywords: neat grinding; acetaminophenol; Naringenin; intermolecular interaction

ABSTRAK

Interaksi Bahan Farmasi Aktif (API) dengan senyawa lain akan mempengaruhi stabilitas obat, toksisitas, mengubah profil disolusi atau dapat membentuk senyawa baru dengan struktur kristal yang berbeda. Asetaminofenol (APAP), obat yang paling umum digunakan secara luas (juga dikenal sebagai Panadol) dicampur dengan Naringenin (NR) untuk mengkaji pembentukan interaksi baru yang mengarah ke pembentukan fasa senyawa baru. Interaksi antara campuran APAP-NR dilihat melalui heterosinton supramolekuler amida-asam N-H...O antara asam dan basa yang sesuai. Interaksi ini disusun oleh interaksi biner dari teknik penggilingan kering dan penggilingan yang dibantu dengan cairan pada stoikiometri rasio biner campuran APAP-NR yang berbeda yaitu rasio molar 1:1, 1:2 dan 2:1. Interaksi diestimasi dengan menggunakan Metode Kontribusi Kelompok (GCM) dan sifat fisikokimia yang karakterisasi melalui Analisis Refleksi Total Fourier Transform Infrared (ATR-FTIR), analisis Difraksi sinar-X (PXRD) dan Diferensial Scanning Calorimetry (DSC). Perhitungan GCM memberikan kekuatan interaksi yang baik pada 212.93 MPa^{1/2}. Hasil ATR-FTIR, DSC dan PXRD yang diperoleh menunjukkan adanya interaksi dengan fase baru yang terbentuk.

Kata Kunci: neat grinding; asetaminofenol; Naringenin; interaksi intermolekuler

INTRODUCTION

Pharmaceutical products are more commonly known as a fundamental component of both modern and traditional medicine. It is essential to study the interaction of Active Pharmaceutical Ingredients (API) with potential interaction compound present in Naringenin. The interaction may interfere with formulation stability and cause toxicity in the body system. The potentially harmful drug interaction and side effects can be reduced by understanding the route of interaction. Drug interactions can be categorized into

drug-drug interaction, drug-food/beverages interaction, and drug-conditions interactions.

Acetaminophenol (APAP) or known as paracetamol is one of the common pharmaceutical products and it is widely used as an antipyretic agent which belongs to a class of drugs known as aniline analgesic to reduce pains. Naringenin (4',5,7-trihydroxyflavanone), is the predominant flavanone as flavonoid glycoside, existing in various plants and is an aglycone of naringin (a flavonoid glycoside, specific to citrus fruits), play roles as an important constituents of human diet which possesses antioxidants, anti-inflammatory, anti-carcinogenic, and anti-tumor effects

* Corresponding author. Tel : +60-10-2310825
Email address : hamiz410@salam.uitm.edu.my