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

Judul Karya Ilmiah (Artikel) : Identification And Analysis of Major Elements in Indonesian Herbal Medicine Using Laser-Induced Plasma Spectroscopy

Jumlah Penulis Status : 5 orang

Pengusul Identitas : Penulis pertama/ ~~Penulis ke-~~ / Penulis Korespondensi **

Jurnal Ilmiah : a. Nama Jurnal : Rasayan Journal Chemistry
b. Nomor ISSN : 0974-1496
c. Volume, Nomor, Bulan, Tahun : Vol. 13, No. 2, Juni 2020
d. Penerbit : Rasayan Journal
e. DOI artikel (jika ada) : 10.31788/RJC.2020.1325592
f. Alamat web jurnal : <http://rasayanjournal.co.in/archiveissue.php?issueid=20>
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d. Kelengkapan unsur dan kualitas penerbit (30%)	11,0	11,1	11,05
Total = (100%)	36,1	36,6	36,35
Nilai untuk Pengusul : (60% x 36,35) = 21,81			

Semarang, 20 April 2021

Reviewer 1



Prof. Dr. Suryono, S.Si., M.Si.
NIP. 197306301998021001

Bidang ilmu/Unit kerja : Fakultas Sains dan Matematika/Fisika

Reviewer 2



Dr. Eng. Eko Hidayanto, S.Si., M.Si.
NIP. 197301031998021001

Bidang ilmu/Unit kerja : Fakultas Sains dan Matematika/Fisika

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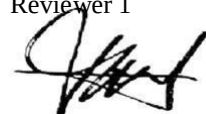
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2. Ruang lingkup dan kedalaman pembahasan:

Paper ini membahas tentang identifikasi dan analisis unsur-unsur dalam obat herbal dengan menggunakan laser yang diinduksi Nd:YAG.

3. Kecukupan dan kemutakhiran data/informasi dan metodologi:

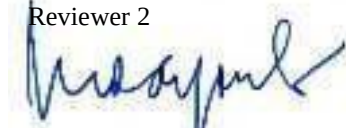
Data-data hasil yang diperoleh dalam penelitian mutakhir dengan didukung metodologi yang tepat.

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Semarang, 20 April 2021

Reviewer 2



Dr. Eng. Eko Hidayanto, S.Si., M.Si.

NIP. 197301031998021001

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Identification and analysis of major elements in Indonesian herbal medicine using laser-induced plasma spectroscopy

Khumaeni A. [✉](#), Hartadi B.S., Wardaya A.Y., Sugito H., Budi W.S.[Save all to author list](#)

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

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Identification and analysis of elements in the herbal medicine have been successfully made by using Nd:YAG laser-induced breakdown spectroscopy. The herbal samples used in this study were Asam urat and flu tulang and Bunga naga medicines. Experimentally, a fundamental Nd:YAG laser was focused on the sample surface to induce a luminous plasma at a reduced pressure of 1333 Pa. The plasma was then sent into the spectrometer to obtain the atomic emission spectrum. The result shows that several atomic lines have been successfully detected including C, Mg, Fe, Ca, Al, and H. Those lines represent the major and minor elements in the herbal medicines, which are very beneficial for a human being. A comparative study has also been made using an x-ray diffraction technique. The result confirmed that those mentioned elements have been also detected. © RASĀYAN. All rights reserved.

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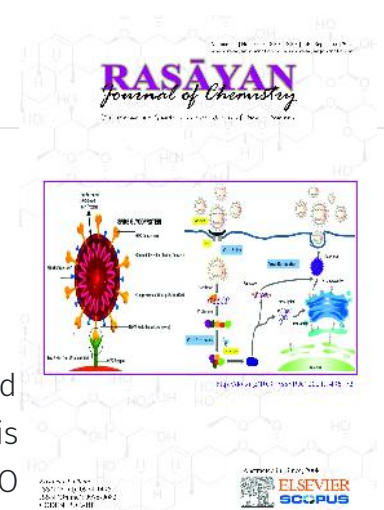


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Department of Chemical Engineering, College of Engineering,
Qatar University, P.O. Box 2713, Doha, Qatar

Contact: +97440434142

Email: b.hammadi@qu.edu.qa

Research Interest: Reaction Engineering, Adsorption Technology



Florent ALLAIS

Director, R&D Unit of Industrial Agro-Biotechnologies URD
ABI- AgroParis Tech, Pomacle, **France**

Contact: +33 633 698 126

Email: Florent.allais@agroparistech.fr

Research Interest: Green Chemistry, Bio-based Polymers



Goutam BRAHMACHARI

Professor, Chemistry Department, Visva-Bharati University,
Santiniketan-731235, India.

Contact: +91 943485744

Email: goutam.brahmachari@visva-bhartai.ac.in

Research Interest: Organic Synthesis; Green Chemistry; Natural products, Medicinal Chemistry



Ishmael MASESANE

Professor, Department of Chemistry, University of Botswana,
Botswana

Contact: 26772874348

Email: MASESANE@UB.AC.BW

Research Interest: Organic synthesis, Natural product Chemistry, Medicinal Chemistry



Marei Mailoud EL-AJAILY

University of Benghazi, Faculty of Science, Department of
Chemistry, Benghazi, **Libya**

Contact: 00218918315683

Email: melajaily@gmail.com

Research Interest: Mixed ligand complexes, Drugs, Applications, Corrosion inhibition, Molecular docking, DFT studies



Mika SILLANPÄÄ



Eno E. EBENSO

Professor, North-West University Gauteng, South Africa

Contact: +27825387286

Email: Eno.Ebenso@nwu.ac.za

Research Interest:



Giusy LOFRANO

Department of Environment, University of Salerno, Salerno,
Italy

Contact: 0039 347 90 60 670

Email: glofrano@unisa.it

Research Interest: nanotechnologies, wastewater
oxidation processes



Hakan ARSLAN

Department of Chemistry, Faculty of Arts and Sciences
Mersin University, Mersin, TR-33343,

Contact: +90.532.7073122

Email: hakan.arslan@mersin.edu.tr

Research Interest: Coordination chemistry, Spectroscopic
Studies, X-ray diffraction studies, Spectroscopy



Ime Bassey OBOT

Center of Research Excellence in
Institute, King Fahd University of
(KFUPM), P.O. Box 489, Dhahran, 3

Contact: +966 13 860-8283

Email: obot@kfupm.edu.sa

Research Interest: Corrosion and Scale Inhibition, Geo-informatics,
Computational Chemistry.



Man SINGH

Professor and Dean, school of Chemical sciences, Gujarat
central University, Gandhinagar, Gujarat, India

Contact: +91 9408635094

Email: mansingh50@hotmail.com

Research Interest: Surface Chemistry, Physical Chemistry



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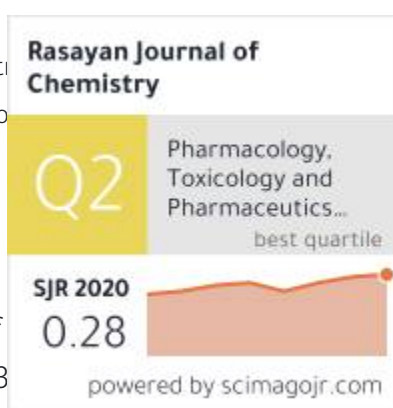
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Department of Chemical Engineering, School of Mining,
Metallurgy and Chemical Engineering, University of
Johannesburg, Doornfontein 2028, South Africa

Contact: +358400205215

Email: mikaesillanpaa@gmail.com

Research Interest: Water treatment



Pankaj KUMAR

Professor and Head, Department of Chemistry, University of
Energy and Petroleum studies, Dehradun, India

Contact: +917351958165

Email: pkumar@ddn.upes.ac.in

Research Interest: Biofuels and Bioenergy, Chemical sensors, Nano-
materials, Minimization of industrial wastes



Ramesh. L. GARDAS

Department of Chemistry Indian Institute of Technology
Madras Chennai-600 036, India

Contact: +91 9884996125

Email: _gardas@iitm.ac.in

Research Interest: Physical Chemistry, Chemical Thermodynamics,
Alternative Solvents



Susheel MITTAL

Senior Professor, School of Chemistry & Biochemistry,
Thapar Institute of Engineering & Technology (Deemed to
be University), Bhadson Road, Patiala-147004, India

Contact: +91-9815653261

Email: smittal2001@yahoo.com

Research Interest: Voltammetric Sensors, Potentiometric Sensors,
Biosensors, Ambient Air Quality and Human Health



Willian Aperador CHAPARRO

School of Engineering, Universidad Militar Nueva Granada,
Bogotá-111121, **Colombia**

Contact: + 57 3142220552

Email: william.aperador@unimilitar.edu.co

Research Interest: Materials, batteries, corrosion, coatings, tribology

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Professor, Department of Chemistry, Ahmadu Bello
University, Zaria, Kaduna State, Nigeria

Contact: +2348038198753

Email: nabukeddy@yahoo.com

Research Interest: Physical Chemistry, Computational Chemistry,
Nanochemistry, Industrial Chemistry, Environmental Chemistry



R.V. SINGH

Ex Professor, Department iof Che
Rajasthan, Jaipur,India

Contact: +91 941406975

Email: rvsjpr@hotmail.com

Research Interest: Inorganic Chemistry

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Laboratoire des Procédés Industriels de Synthèse, de
l'Environnement et des Energies Nouvelles (LAPISEN),
Institut National Polytechnique (INP-HB), Yamoussoukro, BP
991 Yamoussoukro(Côte d'Ivoire)

Contact: (+225) 07 71 67 66

Email: _soro_y@yahoo.fr

Research Interest: Organic synthesis, Natural Products, waste management



V.K. GARG

Professor and Dean Centre for Environmental Science and
Technology School of Environment and Earth Sciences
Central University of Punjab, Bathinda- 151001, India

Contact: +919812058109

Email: vinodkgarg@yahoo.com

Research Interest: Pollution Monitoring and abatement, Solid Waste
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P. Ratheshkumar¹, S. Induja¹, R. Ravishankar² and P.S. Raghavan^{1,*}

¹Department of Chemistry, Hindustan Institute of Technology and Science,
Padur, Kelambakkam, Chennai-603 103, India

²Hindustan Petroleum Corporation Limited, KIADB Industrial Area, Bengaluru-56006

*E-mail: raghavan@hindustanuniv.ac.in

ABSTRACT

For the first time, thermally stable ‘molybdenum blue’ was prepared in a single step, using boron phosphate. Even though molybdenum blue was discovered more than a century ago, it has not been studied extensively due to its instability. Presence of variable oxidation states of molybdenum makes it more suitable for catalytic transformations, but fewer reports are available, since, they were generally prepared in solutions. The present investigation reports the preparation of stabilized molybdenum blue powder using boron phosphate. The sample was evaluated for its catalytic activity on the transformation of diphenyl sulfide to sulfoxide selectively, and results were compared with MoO₃ impregnated analog.

Keywords: Molybdenum Blue, BPO₄ Stabilized, Polymolybdates, Selective Sulfoxidation.

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INTRODUCTION

Polyoxomolybdates are molecules containing molybdenum in high oxidation state, linked by oxygen atoms forming Keggin type structure¹. In the presence of hetero atoms like P, Si, As, etc., they form a big-sphere type structure containing Mo₁₃₂ or big-wheel type structure containing Mo₁₅₄ or lemon-shaped cluster (Mo₃₆₈). They appear as blue due to partial reduction of Mo^{VI} to Mo^V as first observed by Scheele in 1778^{1,2} to be amorphous. The structure of the molybdenum blue allows change of coordination number on side chain at Mo sites and made up of Mo-O-Mo bond with moderate strength containing terminal – Mo=O sites. In spite of the above said advantages, very less literature is available for exploring catalytic activity of molybdenum blue⁷. Generally, molybdenum blue was prepared by partial reduction of an acidified solution containing molybdates³. Other preparation methods include exfoliation of MoS₂ nanotube⁴, using reducing agents⁵ and microorganisms⁶. Most of the preparation methods reported in the above literature lead to molybdenum blue solution, where the catalytic applications are limited. Recently, the preparation of solid molybdenum blue powder has been achieved by evaporating the aqueous solution containing the same⁷; another method involved the electrochemical reduction of sodium molybdate solution using graphite/platinum electrodes⁸. The drawbacks of the above process are either they involve high temperature or time-consuming process or not viable for large scale synthesis of solid molybdenum blue.

EXPERIMENTAL

The preparation of the stabilized molybdenum blue by BPO₄ involved mixing of required quantities of boric acid (99.5%) and ammonium heptamolybdate (99.5%) thoroughly with the help of mortar-pestle, in presence of 25 ml of 2-propanol. After drying at room temperature, the powder was transferred into a glass beaker and blended well with calculated quantities of phosphoric acid (85%) to form a paste. The contents were dried at 120°C for 4 h and the dried mass was powdered and calcined between 150°C and 500°C for 2 h. The deep-blue colored powder sample was labeled as MB(10)BP (number in parenthesis represents weight % of Mo as MoO₃) and Table-1 gives the composition and identification of the samples. The appearance of the MB(10)BP is shown in Fig.-1.

The synthesis of the impregnated sample involved mixing boric acid and phosphoric acid in the mole ratio of 1:1 in presence of 25 ml of 2-propanol followed by drying in an oven at 120°C for 4 h.

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DESIGN AND SYNTHESIS OF 5-OXOPYRROLIDINE-3-CARBOXYLIC ACID DERIVATIVES AS POTENT ANTI-INFLAMMATORY AGENTS

K. M. Pandya and P. S. Desai*

*Department of Chemistry, Arts, Science, and Commerce College, Kholwad
Kamrej Char Rasta-394185, Surat, Gujarat, India.

*E-mail: psdesai69@gmail.com

ABSTRACT

To established novel 5-oxopyrrolidine-3-carboxylic acid derivatives with improved anti-inflammatory activity. We are reporting here the synthesis and *in-vitro* anti-inflammatory evaluation of a series of pyrrolidinone derivatives. A series of new 5-oxopyrrolidine-3-carboxylic acid derivatives were synthesized from the reaction of 2-(5-((5-benzoyl-1H-benzo[d][1,2,3] triazol-1-yl) methyl)-2-thioxo-1,3,4-oxadiazol-3(2H)-yl) acetohydrazide with aromatic aldehydes and succinic anhydride reaction. Anti-inflammatory activity of all the compounds was screened against MMP-2 and MMP-9, all results are excellent, **3d**, **3e**, and **3f** compounds are quite promising against matrix metalloproteins (MMPs). All the isolated compounds were characterized by elemental analysis, ¹HNMR, ¹³CNMR, and mass spectral analysis.

Keywords: Synthesis, 5-Oxopyrrolidine-3-carboxylic Acid, Anti-inflammatory Activity.

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INTRODUCTION

Heterocyclic compounds are the important class of molecules for its biologicals function in which pyrrolidinone hold exclusive because of its lead use.¹⁻⁵ Pyrrolidinones are heterocyclic compounds which show a broad area of biological potency, for example, antibacterial and antifungal.^{6,7} Pyrrolidinones are a class of 5-membered lactams with a four-carbon ring structure with biological interest.⁸⁻¹⁰ Pyrrolidinones are substantial molecules that are constructed in many pharmaceutical drug syntheses and active natural products. One familiar biochemically substantial pyrrolidinone is cotinine and alkaloid discovered in tobacco that is the predominant metabolite of nicotine.¹¹ Various Famous illustrations of natural products have the pyrrolidinone subdivision. Pyrrolidinone-having natural products exhibit immensely interesting biological activities. Lactacystin, e.g., is an organic compound naturally produced by bacteria of the genus *Streptomyces*, as was first discovered in 1971.¹² One more interesting natural product is called Salinosporamide A, this aquatic natural product is created by the constraining aquatic bacteria *Salinispora tropica* and *Salinispora arenicola*, which are in ocean silt.¹³ Azaspirorene is a new angiogenesis inhibitor that is detached from the fungus *Neosartorya* sp.¹⁴ Substituted 3-pyrroline-2-ones with a 2-pyrrolidinone subdivision are also of merits in medicinal chemistry as abundant derivatives have demonstrated momentous pharmacological and biological potency, as, e.g., anti-cancer agents^{15,16}, antitumours¹⁷, HIV-1 integrase inhibitors^{18,19}, anti-microbial²⁰, antibacterial²¹, and anti-inflammatory²². The anticipated concern of substituted pyrrolidinones, different synthetic procedures has been disclosed²³⁻³¹.

Over the past decades, many attempts have been made to identify the structural features³² essential for anti-inflammatory activity. As a result, it is well established that one of the important core fragments is defined by a nitrogen heteroatomic system, usually cyclic imide, with at least one carbonyl group and phenyl or alkyl groups attached to the heterocyclic system.³³⁻³⁵ The examples of the above-mentioned structures are pyrrolidine-2,5-dione, pyrrolidin-2-one or imidazolidine-2,4-dione. They are present in the molecules of both first-generation AEDs such as phenytoin, ethosuximide, and also in newer drugs like levetiracetam, brivaracetam, and seletacetam (Fig.-1).