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

Judul Jurnal Ilmiah (Artikel)	:	A Simpleroute Synthesis of Polycrystalline TiO2-Ag by The Sonochemical Method for Photocatalytic Direct Blue71 Degradation		
Nama/ Jumlah Penulis	:	6 Orang		
Status Pengusul	:	Penulis pertama/ ~~Penulis ke~~ / Penulis Korespondesi **		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal	:	Rasayan Journal of Chemistry
		b. Nomor ISSN	:	0974-1496 eISSN : 0976-0083
		c. Vol, No., Bln Thn	:	Vol 12 No 1, Januari 2019 Hal 138-145
		d. Penerbit	:	Rasayan Journal
		e. DOI artikel (jika ada)	:	http://dx.doi.org/10.31788/RJC.2019.1215034
		f. Alamat web jurnal	:	http://rasayanjournal.co.in/archiveissue.php?issueid=15
		Alamat Artikel	:	rasayanjournal.co.in/admin/php/upload/560_pdf.pdf
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Total = (100%)			39,40
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Semarang, 8 Maret 2023

Reviewer 1

Prof. Dr. Rahmat Gernowo, M.Si
NIP. 196511231994031003
Unit Kerja: FSM Universitas Diponegoro
Bidang Ilmu: Fisika

Reviewer 2

Prof. Dr. Kusworo Adi, S.Si., M.T.
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Semarang, 1 Maret 2023
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2. **Ruang lingkup dan kedalaman pembahasan:** Lingkup bahasan dari artikel ini adalah bidang fisika. Pembahasan cukup baik yaitu disintesis serbuk titania (TiO2-Ag) dengan doping perak dengan varian Ag menggunakan metode sonokimia sederhana. Sampel yang telah disiapkan diidentifikasi menggunakan difraktometri sinar-X (XRD) dan pemindaian mikroskop elektron (SEM) untuk menyelidiki struktur kristal dan morfologi, masing-masing. Kedalaman pembahasan baik.
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:** Informasi yang disajikan cukup baru dan hasil yang diperoleh memuat substansi orisinil dengan aspek aplikasi yang penting. Sumber gagasan penulis untuk artikel ini banyak dan komprehensif. Dari 30 referensi yang dipakai terdapat 6 paper yang lebih dari 10 tahun terakhir (out of date). Metodologinya baik dan penulisannya terstruktur.
4. **Kelengkapan unsur dan kualitas terbitan:** Artikel dimuat di Jurnal Rasayan Journal of Chemistry, pada Vol 12 No 1, Januari 2019 Hal 138-145. Diterbitkan oleh Rasayan Journal. Journal terindeks Scopus (Q2, SJR 0,33).

Semarang, 1 Maret 2023
Reviewer 2

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A simpleroute synthesis of polycrystalline TiO $_2$ -Ag by the sonochemical method for photocatalytic direct blue 71 degradation

Sutanto H.[a, b] ; Marhaendrajaya I.[a]; Jaya G.W.[a]; Hidayanto E.[a]; Mukholit M.[a]; Wibowo S.[a]; Wahyono Y.[a]

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Abstract

In this paper, silver-doped titania (TiO $_2$ -Ag) powders have been synthesized with Ag variants using a simple sonochemical method. The prepared samples were identified using X-ray diffractometry (XRD) and scanning electron microscopy (SEM) to investigate the crystal structure and morphology,

respectively. All samples showed the polycrystalline anatase phase and the plane exhibited the (101) dominant orientation. The smallest crystallite sample size of about 14.9 nm was obtained with a 3% Ag doping (TAg3). At higher Ag concentrations, the metal peaks could be detected at 44.3° and 64.4°. SEM images showed that all samples were agglomerated except the TAg3 sample with the lowest surface area of the active sites. Photocatalytic activity was carried out using Direct Blue 71 (DB71) as an organic pollutant. TAg4 exhibited the highest activity under ultraviolet (UV) irradiation with a degradation rate of 0.01 ppm/min. Results suggest that our TiO_2 -Ag photocatalyst performed well when prepared by a simple sonochemical method.

Author keywords

Ag doping; Direct blue 71; Photocatalytic; Sonochemical; Titania

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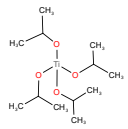

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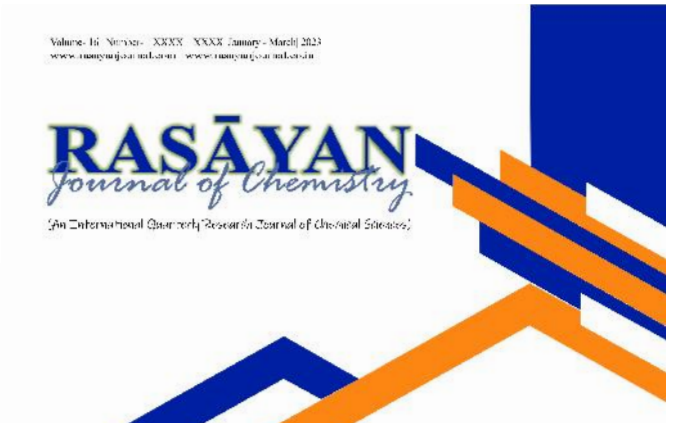

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EXTRACTION, CHARACTERIZATION AND INVITRO BIOACTIVITY EVALUATION OF ALKALOIDS, FLAVONOIDS, SAPONINS AND TANNINS OF *Cassia alata, Thespesia populnea, Euphorbia hirta* AND *Wrightia tinctoria*

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Abstract

The use of medicinal plants to treat infections as a practice can be witnessed since the prehistoric era. Even as on date three-quarter of the world's population totally depends on plants for their primary health care benefits. In this study, secondary metabolites like alkaloids, flavonoids, tannins and saponins were extracted from four medicinal plants viz. *Cassia alata, Thespesia populnea, Euphorbia hirta* and *Wrightia tinctoria* and characterized by UV, TLC, FTIR and GCMS analysis. The metabolites were checked for the antibacterial activity using agar well diffusion method and swarming motility assay against *Pseudomonas aeruginosa*. The alkaloids and saponins of *Cassia alata, Euphorbia hirta, Thespesia populnea* and *Wrightia tinctorial* showed dose-response antibacterial activity. The highest antibacterial activity of 1.9 cm was seen for the tannin of *Wrightia tinctoria* and saponin of *Euphorbia hirta*at 16µg concentration. Flavonoid of *Euphorbia hirta, Cassia alata* and *Wrightia tinctorial* showed good percentage inhibition of free radicals in DPPH scavenging assay supportive of the antioxidant property. The highest percentage inhibition of 88.75% was noted for tannin of *Euphorbia hirta* at 50 µg concentration. Antioxidant activity was also checked qualitatively by TLC bioautography and quantitatively for its reducing power on the free radicals by FRAP and phosphomolybdenum assay. The extracted metabolites especially alkaloids were able to restrict the movement of micro organisms to a confined space which was evident from the swarming test.

Keywords: Alkaloid; flavonoids; tannin; saponin; antibacterial; antioxidant

INTRODUCTION

The growing mode of plants as fixed to one place has left it defenseless against many predators like animals, insects and microbes. Furthermore, they are to prove their ecological succession by overthrowing competition from the germinating neighbors which subsequently has led to the evolution of certain molecules as phytoprotectants.[1] These phytochemicals are modified products obtained by chemical reactions like methylation, hydroxylation and glycosylation from the precursor molecules like carbohydrates, proteins, lipids and nucleic acids which are primary for the plant survival.[2] Secondary metabolites do have other functions as UV protectants, attractants of pollinating insects and many more.[3] Based on the chemical structure, composition, solubility and biochemical synthesis the secondary metabolites are broadly classified as terpenes, phenolics, nitrogen and sulphur containing compounds.[4] The pharmacological activity of a plant depends on its phytochemicals either as a single molecule or combinations. The flavonoid, for instance, are polyphenolic molecules with a hydroxyl group placed in different positions conferring various activity like antioxidant, antimicrobial, enzyme inhibitory, anti-inflammatory, oestrogenic, anti-allergic, vascular and cytotoxic antitumor activity.[5]Recent reports revealed that phenolic components like flavonoids possibly form a complex with the calcium and potassium oxalates which could provide a potential cure for treating kidney stones.[6] Alkaloids, on the

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NOVEL COMPLEXES OF RUTHENIUM(III) WITH SCHIFF BASES AND INDAZOLE – SYNTHESIS AND CHARACTERIZATION

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ABSTRACT

Two novel cationic Ru(III) complex compounds with Schiff bases, *N*-phenyl-5-X-salicylideneimine (where X = H or Br) and indazole have been synthesized and characterized by various spectral and electrochemical analysis. The existence of molecular ions M^+ at m/z 730.1652 and 887.9818 corresponding to $[C_{40}H_{32}N_6O_2Ru]^+$ and $[C_{40}H_{30}Br_2N_6O_2Ru]^+$, respectively, was obtained by mass spectra analysis. The coordination of the ligands in the Ru(III) octahedral environment occurs through imine nitrogen, deprotonated phenolic oxygen atom from the Schiff bases as well as *via* the free electronic pair on the nitrogen atom in indazole. Furthermore, the effect of the cationic Ru(III) complexes on the Briggs-Rauscher oscillating reaction was preliminary studied and monitored potentiometrically.

Keywords: Ru(III) complex, Schiff base, indazole, Briggs-Rauscher, oscillation

INTRODUCTION

Schiff bases as a compound with azomethine linkage (-C=N-) are versatile and very popular ligands for metal coordination[1,2]. Since Schiff bases show diverse biological activity, a significant number of metal complexes with various ligands have been synthesized and their activities against different targets have been investigated[3-8]. Antibacterial, antifungal, antiviral, antioxidant and cytotoxic activities have been reported[1,9-12]. Ruthenium(III) complexes are of immense interest regarding their kinetic inertness[13]. Some ruthenium(III) complexes containing ON or ONS donor atoms were synthesized in our laboratory regarding interaction with DNA or genotoxic activity have been previously reported[4,5,14]. Ru(III) complexes containing indazole, imidazolium *trans*-[tetrachlorobis(1H-indazole)ruthenate(III)] (KP1019) and sodium *trans*-[tetrachlorobis(1H-indazole)ruthenate(III)] (NKP-1339) have proofed an extraordinary antiproliferative properties and entered clinical trials[15]. The indazole ring system is a partial component of a huge number of biologically active compounds and most of them exhibit a broad spectrum of bioactivities[16,17]. Interaction of cationic complex Ru(III) containing indazole and Schiff base derived from 5-chlorosalicylaldehyde and aniline with DNA by spectrophotometric titration according to the calculated binding constant indicated non-covalent binding and was described as a major groove binding[18]. In this study, synthesis, characterization and the effect on the Briggs-Rauscher oscillating reaction of new Ru(III) cationic complexes with indazole and Schiff bases derived from salicylaldehyde or 5-bromosalicyladehyde and aniline were reported. This is a continuation of the research activities of the synthesis and characterization of ruthenium(III) complexes with Schiff bases and *N*-heterocycles.

EXPERIMENTAL

Materials and Methods

All chemicals were of analytical grade, purchased from commercial suppliers. The matrix-assisted laser desorption/ionization (MALDI) mass spectrometer, 4800 Plus TOF/TOF (time-of-flight) (Applied

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