



(ISSN : 0975-7384)

Journal of Chemical and Pharmaceutical Research

An International Peer Reviewed Journal of
Chemical and Pharmaceutical Sciences

Editorial Board

Executive Editor

Dr. V K Sharma (Chemical Sciences)

Dr. C S Chauhan (Pharmaceutical Sciences)

Associate Editor

Dr. Rahadian Zainul

Dr. P S Naruka

Dr. H P Singh

Dr. C S Sharma

Editorial Board

Dr. A U Itodo, Kebbi State University of Science and Technology, Aliero, Nigeria

Dr. Abdelkader Zarrouk, Laboratory of Applied Chemistry & Environment Department of Chemistry, Faculty of Science, University Mohammed Premier, Oujda, Morocco

Dr. Abdul Wahab, Department of Pharmacy, Kohat University of Science and Technology, Khaiber Pakhtoon Khwa, Pakistan

Dr. Abhijit Ghosh, Brigham Young University, UT, USA

Dr. Adaobi Ezike, University of Nigeria, Nsukka, Enugu, Nigeria

Dr. Adediji Johnson F, Federal University of Agriculture Abeokuta, Abeokuta, Ogun, Nigeria

Dr. Adel Kamel Madbouly, Biology Department, Faculty of Science, University of Tabuk, Tabuk, KSA

Dr. Ahmad F. EL Shahaby, Biotechnology and Genetic Engineering Unit, College of Medicine, Taif University, KSA

Dr. Ahmed O Alnajjar, King Faisal University, Saudi Arabia

Dr. Akmal Shawky Gaballa, Faculty of Specific Education, Zagazig University, Zagazig, Egypt

Dr. Alaa E. Ali, Head of Chemistry Department, Faculty of Science, Damanhour University, Damanhour, Egypt

Dr. Aleksandra N Pavlović, University of Niš, Višegradska, Niš, Serbia

Dr. Ali H. Al-Mowali, University of Basrah, Basrah, Iraq

Dr. Alireza Garjani, Tabriz University of Medical Sciences, Tabriz, Iran

Dr. Aman Dekebo, Adama Science and Technology University, Adama

Dr. Amer E A, Cairo University, Egypt

Dr. Ari Yuniarto, Division of Pharmacology - Bandung School of Pharmacy/ Sekolah Tinggi Farmasi Bandung (STFB), Bandung, Indonesia

Dr. Asep Sukohar, Medical Faculty, Lampung University, Indonesia

Dr. Atul Kumar Singh, CRNTS, IIT Bombay, Bombay, India

Dr. Aytac Güder, Giresun University, Turkey

Dr. B Boumoud, Université Mentouri de Constantine, Constantine, Algérie

Dr. B M Rao, Johnson & Johnson Ltd, Mumbai, India

Dr. B S Bhoop, UIPS, Punjab University, Chandigarh, India

Dr. Bachir Benarba, Department of Biology, University of Mascara, Algeria

Dr. Bernard Guyot, UMR Qualisud (CIRAD), Université Montpellier II, France

Dr. Brian Henriksena, Creighton University, Omaha, NE

Dr. C Venkata Rao, Sri Venkateswara University, Tirupati, India

Dr. C. Jayakumar, Department of Chemical Engineering, A. C. Technology, Anna University, Chennai, India

Dr. C. Sampath, Department of Chemistry, KwaDlangezwa, KwaZulu-Natal, University of Zululand, South Africa

Dr. Camilia G Michel, Cairo University, Cairo, Egypt
Dr. Chandeshwar iChilampalli, Insys Therapeutics Phoenix, AZ, USA
Dr. Chengyuan Liang, Department of Pharmacy, Shaanxi University of Science & Technology, Xi'an, Shaanxi, P. R. China
Dr. Chinyere Okwelogu, University of Lagos, Nigeria Dr. Chukwuemeka P C Azubuike, University of Lagos, Lagos, Nigeria
Dr. Chukwuma O Agubata, University of Nigeria, Nsukka
Dr. Clement Jackson, University of Uyo, Uyo, AkwaIbom, Nigeria
Dr. Craig A Obafemi, Obafemi Awolowo University, Ile-ife, Osun, Nigeria
Dr. D J Sen, Shri Sarvajani Pharmacy College, HN Gujarat University, Mehsana, India
Dr. D S Ashilenje, Moi University, Eldoret, Kenya,
Dr. D S Salomé Kpoviessi, University of Abomey-Calavi, LaCOPS, Cotonou, Benin
Dr. Dachriyanus, Faculty of Pharmacy, Andalas University, Kampus Limau Manis, Padang, West Sumatra, Indonesia
Dr. Dafeng Chu, Department of Pharmaceutical Sciences, School of Pharmacy, Washington State University, Washington
Dr. Demiana I Nesseem, National Organization for Drug Control and Research, Cairo, Egypt
Dr. Dewan Tasiima Akhter, Stamford University Bangladesh, Dhaka, Bangladesh
Dr. Dilipkumar Pal, Bilashpur Institute of Pharmaceutical Sciences, Guru Ghasidas Viswavidyalaya, Koni, Bilashpur
Dr. E J Koranteng-Addo, University of Cape Coast, Cape Coast, Ghana
Dr. Edebi N Vaikosen, Niger Delta University, Wilberforce Island, Nigeria
Dr. Elsayed T. Helmy, Chemistry Department, Faculty of Science, Mansoura University, Egypt
Dr. F M AL-Jabri, Basrah University, Basrah, Iraq
Dr. G Aranovich, Johns Hopkins University, Baltimore, Maryland, USA
Dr. Gabriel O Egharevba, Obafemi Awolowo University, Ile-ife, Osun State, Nigeria
Dr. Galal H Said, Ain-Shams University, Egypt
Dr. H M Hassan, Al-Azhar University, Nasr City, Cairo, Egypt
Dr. Haddad Boumediene, Department of Chemistry, Synthesis and Catalysis Laboratory LSCT, Taret University, Taret, Algeria
Dr. Hanaa H. Ahmed, Head of Hormones Department, Medical Research Division, National Research Centre, Egypt
Dr. Hanan M Al-Youssef, King Saud University, Riyadh, Saudi Arabia
Dr. Hany A. Omar, Department of Pharmacology, College of Pharmacy, University of Sharjah, UAE
Dr. Hao Wu, NGM Biopharmaceuticals Inc., 630 Gateway Blvd., South San Francisco, CA
Dr. Hari Kishore Annavarapu, University of Texas Southwestern Medical Center, Dallas, Texas,
Dr. Hassan Ahmadvand, Dept. of Biochemistry, School of Medicine, Lorestan University of Medical Sciences, Khoram Abad, Iran
Dr. Hassan Ali Zamani, Quchan Branch, Islamic Azad University, Quchan, Iran
Dr. Ho Soon Min, Faculty of Applied Sciences, INTI International University, PersiaranPerdana BBN, Putra Nilai, Nilai, Negeri Sembilan, Malaysia
Dr. Houda Bouchafra, Laboratory of Organic Chemistry Application, Faculty of Sciences and Techniques, FES University Sidi Mohammed Ibn Abdillah, FES, Morocco
Dr. Hua-Jun Luo, College of Biological and Pharmaceutical Science, China Three Gorges University, Yichang, Hubei province, P. R. China
Dr. Ikotun Adebomi Ayodeji, Bowen University, Iwo, Osun State, Nigeria
Dr. Inna Razdorskaya, Department of Management and Economics of Pharmacy, Kursk State Medical University, Russia
Dr. J K Koka, University of Cape Coast, Ghana
Dr. J K Tufuor, University of Cape Coast, Cape Coast, Ghana
Dr. J P K, Adotey, University of Cape Coast, Ghana
Dr. Jackson Roberto Guedes da Silva Almeida, Universidade Federal do Vale do São Francisco, Petrolina, Pernambuco, Brazil

Dr. Jin Quan Wang, Institute of Bioengineering and Nanotechnology, Singapore

Dr. Jinghua Duan, Department of Pharmaceutics, School of Pharmacy, University of Washington, Seattle, WA, USA

Dr. Jitendra Ramteke, Department of Physics, SMMC, Nagpur, India

Dr. Juliane Tolentino de Lima, Universidade Federal do Vale do São Francisco, Petrolina, Pernambuco, Brazil

Dr. Kabore Adama, Institut de l'Environnement et de Recherches Agricoles, Ouagadougou, Burkina Faso

Dr. Kawkab Ali Hussain, University of Basrah, Iraq

Dr. Kelly Samara de Lira Mota, Universidade Federal da Paraíba, João Pessoa, Paraíba, Brazil

Dr. Ketan C. Parmar, Sir P T Sarvajani College of Science, Surat, India

Dr. Khaled Nabih Zaki Rashed, National Research Centre (NRC), Pharmacognosy Department, Pharmaceutical and Drug Industries Research Division, Dokki, Giza, Egypt

Dr. Kiran Vangara, Insys Therapeutics. Inc., Chandler, AZ, USA

Dr. Kishorbhai R. Desai, Department of Chemistry, Uka Tarsadia University, Bardoli-Mahuva Road, Bardoli, Surat

Dr. Konstantinos M. Kasiotis, Benaki Phytopathological Institute, Department of Pesticides Control and Phytopharmacy, Kifissia, Athens

Dr. Lotf Ali Saghatforoush, Payame Noor University, Iran

Dr. Lotfi Baameur, Kasdi Merbah University, Ouargla, Algeria

Dr. Lucas V B Hoelz, Cidade Universitária, Ilha do Fundão, Rio de Janeiro, RJ, Brazil

Dr. M A Faouzi, Faculté de Médecine et Pharmacie, Rabat - Instituts, Maroc

Dr. M A Kamal, Fundamental and Applied Biology Group Leader, King Fahd Medical Research Center, King Abdulaziz University, Saudi Arabia

Dr. M K Gafar, Kebbi State University of Science and Technology, Aliero, Nigeria

Dr. M O Agwara, University of Yaoundé I, Yaoundé, Cameroon

Dr. M P Kanyonga, UER de biochimie, chimie médicale et pharmacologie, I S T M Kinshasa, R D Congo

Dr. M. V. Ramana, Department of Physics, S. R. & B. G. N. R. Government Arts and Science College, Khammam, A.P., India

Dr. Madu P C, Nasarawa State University, Keffi

Dr. Mahesh Bhide, Coldstream Labs, Kentucky, USA

Dr. Mahmoud Bahmani, Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran

Dr. Mahmoud Mahyoob Alburyhi, Faculty of Pharmacy, Sana'a University, Yemen

Dr. Mahmoud Salman, Taif University, Taif, Kingdom of Saudi Arabia

Dr. Majdoulina Larif, Separation Process Laboratory, Faculty of Science, University Ibn Tofail, Kenitra, Morocco

Dr. Makky E A, University Malaysia Pahang, Kuantan, Pahang, Malaysia

Dr. Maryam Niyayati, Department of Medical Parasitology & Mycology, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Dr. Mellah Ilyas, Department of Chemistry, Uludag University, Turkey

Dr. Menderes Koyuncu, Yuzuncu Yil University, Van, Turkey

Dr. Mirni Lamid, Faculty of Veterinary Medicine, Airlangga University, Kampus C UNAIR, Mulyorejo Surabaya-East Java, Indonesia

Dr. Mohamed Abdelmanef Abderrabba, The Molecular Materials and Applications Laboratory, IPEST, University of Carthage, La Marsa, Tunisia

Dr. Mohamed Salama, Faculty of Pharmacy UTM (Universiti Teknologi Mara), Campus Puncak, Alam, Selangor, Malaysia

Dr. Mohammed Abdelwahab Abdelgawad, Department of Pharmaceutical Organic Chemistry, Faculty of Pharmacy, Beni Suef University, Beni Suef, Egypt

Dr. Mohammed Rahmatullah, Faculty of Life Sciences, University of Development Alternative, Dhanmondi, Dhaka, Bangladesh

Dr. Youssef Ramli, Faculty of Medicine and Pharmacy, Mohammed V University- Rabat, Morocco

Dr. Mohammed Y S Abary, Cairo University, Egypt

Dr. Moinuddin Sarker, Natural State Research (NSR) Inc., Stamford, CT, USA
Dr. Moynul Hasan, Dhaka International University, Banani, Dhaka, Bangladesh
Dr. Mubo A Sonibare, University of Ibadan, Ibadan Nigeria
Dr. Munther Abdul-Jaleel Mohammed-Ali, Basra University, Basra, Iraq
Dr. Murlidhar P. Wadekar, Department of Chemistry, Govt. Vidarbha Institute of Science & Humanities, Amravati, India
Dr. N. Vijayakumar, Department of Biochemistry and Biotechnology, Annamalai University, India
Dr. Naji A Abood, Basrah University, Basrah, Iraq
Dr. Nasr H El-Hammamy, Alexandria University, Alexandria, Egypt
Dr. Neeta Raj Sharma, Faculty of Biotechnology & Biosciences, Lovely Professional University (LPU), Phagwara, Punjab, India
Dr. Nesree nNadhumMajeed, Basra University, Basra, Iraq
Dr. Nora H Al-Shaalan, Princess Nora Bint Abdul Rahman University, Riyadh, Saudi Arabia
Dr. Nurul Ail iZakaria, Universiti Sains Malaysia, Pulau Pinang, Malaysia
Dr. O R Omobuwajo, Niger Delta University, Wilberforce Island, Nigeria
Dr. Okan Özkaya, Çukurova Üniversitesi, Ziraat Fakültesi Bahçe Bitkileri Bölümü, Balcalı Adana
Dr. Ola I. A. Salem, Pharm Organic Chemistry Department, Faculty of Pharmacy, Assiut University, Assiut, Egypt
Dr. Omar B Ibrahim, Taif University, Taif, Kingdom of Saudi Arabia
Dr. Omodamiro Olorunshola Dave, Department of Biochemistry, Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria
Dr. P C Sharma, Kurukshetra University, Kurukshetra, India
Dr. P M Kanyonga, Pôle de CompétencesPharmacochimie, Faculté des Sciences-Agdal, IbnBattouta, Rabat- Maroc
Dr. P Sumanatrakul, Prince of Songkla University, Songkhla, Thailand
Dr. P. Selvarajan, Department of Physics, Aditanar College of Arts and Science, Tiruchendur, Tamilnadu
Dr. Patricia A Onocha, University of Ibadan, Nigeria
Dr. Paul C. Chikezie, Department of Biochemistry, Imo State University, Owerri, Imo State, Nigeria
Dr. Pauline Mounjouenpou, Institut de Recherche Agricole pour le Développement, Yaoundé, Cameroun
Dr. PF Uzor, University of Nigeria, Nsukka, Enugu State, Nigeria
Dr. Prem Prakash Solanki, Banaras Hindu University, Varanasi, India
Dr. Prem Raj, Lucknow University, Lucknow, India
Dr. Reza Tayebee, Sabzevar Tarbiat Moallem University, Sabzevar, Iran
Dr. S A Abubshait, University of Damam, Saudi Arabia
Dr. S Lucangioli, Consejo Nacional de Investigaciones Científicas y Tecnológicas, Argentina
Dr. S N Meyyanathan, J S S College of Pharmacy, Ooty, India
Dr. S P Tripathi, Poorvanchal University, Jaunpur, India
Dr. S S Sisodia, B N College of Pharmacy, Udaipur, India
Dr. Safwan Fraihat, Al Jouf University, Chemistry Department, College of Science, Jordan
Dr. Salem Ashoor, University of Misurata, Libya
Dr. Seyed Mehdi Talebi, Shahid Beheshti University, Iran
Dr. Shaaban K Mohamed, Manchester Metropolitan University, Manchester, UK
Dr. Shameema Oottikkal, Ohio State University, Columbus, Ohio, USA
Dr. Shivanand Puthli, TrisPharma Inc., NJ, USA
Dr. Sidney Augusto Vieira Filho, Universidade Federal de Ouro Preto, Ouro Preto, MG, Brazil
Dr. Sitaram Bhavaraju, US Pharmacopeia, Rockville, MD, USA
Dr. Soad A Yehia, Cairo University, Cairo, Egypt
Dr. Soumik Biswas, Department of Chemistry, Texas A & M University, TX

Dr. Srinivas Chiguru, Department of Radiology, The University of Southwestern Medical Center, Dallas, TX
Dr. Srinivas Nammi, University of Canberra, Australia
Dr. Sushama Talegaonkar, Department of Pharmaceutics, Faculty of Pharmacy, JamiaHamdard, New Delhi
Dr. Tanay Kesharwani, New Link Genetics, Ames, IA, USA
Dr. Tarik Chaouche, Tlemcen University, Tlemcen, Algeria
Dr. Tariq K. Almog, Tripoli University, Tripoli, Libya
Dr. Uhood J AL- Hamdani, University of Basrah, Basrah, Iraq
Dr. Vamsidhar Akurathi, Division of Nuclear Medicine and Molecular Imaging, Boston Children's Hospital/Harvard Medical School, Boston, MA, USA
Dr. VibhaYadav, Division of Microbiology, Tulane National Primate Research Center, Covington, LA, USA
Dr. Vijay Gottumukkala, Eckert & Ziegler Eurotope GMBH, Hopkinton, MA, USA
Dr. Wael Ahmad Abu Dayyih, Department of Pharmaceutical Medicinal Chemistry and Pharmacognosy, Faculty of Science, Petra University, Amman, Jordan
Dr. Waleed M Sweileh, An-Najah National University, Nablus, Palestine
Dr. WenjieCai, University of Connecticut, Storrs, CT, USA
Dr. William N Setzer, University of Alabama in Huntsville, Huntsville, USA
Dr. Y A El-Badry, Ain Shams University, Cairo, Egypt
Dr. Youssef Ramli, Medicinal Chemistry Laboratory, Faculty of Medicine and Pharmacy, Mohammed V University-Rabat, Morocco
Dr. Z Bayat, Islamic Azad University-Quchan Branch, Iran
Dr. Zhi-Zhong Wang, Ningxia Medical University, Yinchuan, Ningxia, P R China

CONTENT

Biosorption of cadmium (II) ions from aqueous solution by cassava (*Manihot utilissima*) leaves

Adrian, Edy Fachrial, Almahdy, Syaifullah, Edison Munaf and Rahmiana Zein

Page No:1-8

Immunohistochemical detection of P53 protein as a prognostic indicator in prostate carcinoma

Bungaran Sihombing, Jamaludin, Djong Hon Cong, Sanusi Ibrahim and Sumaryati Syukur

Page No:9-13

A catalytic test of Mn(II) and Ni(II) grafted on modified mesoporous silica in transesterification of vegetable oil

Admi, Vanella Indah Pratiwi, Fitria Ramadhani, Sry Wahyuni, Jervita Sari, Meri Asnita, Wiza Ladya, Syukri Arief, Emdeniz, Mai Efdi, Zulhadjri and Syukri

Page No:14-16

Synthesis of biodiesel from waste cooking oil by two steps process transesterification and ozonation

Lieke Riadi, Aloysius Yuli Widiyanto, Edy Purwanto, Akso Pono and Ruth Theresia

Page No:17-21

Adsorption profile of Cu (II) using Soursop (*Annona muricata L*) leaves powder as biosorbent

Buter Samin, Edy Fachrial, Almahdy, Edison Munaf, Refilda, Zulkarnain Chaidir and Rahmiana Zein

Page No:22-27

Biosorption of zinc (II) ions from aqueous solution by *Andrographis paniculata* leaves powder on batch method

Deli, Zulkarnain Chaidir, Almahdy, Rahmiana Zein and Edison Munaf

Page No:28-38

Adsorption of Cu(II) using *Sauropus androgynus* (L.) Merr. from aqueous solution

Chrismis Novalinda Ginting, Edison Munaf, Almahdy, Eti Yerizel and Rahmiana Zein

Page No:39-45

The optimization of biopolyol synthesis from liquefaction of rice straw using response surface method

Edy Purwanto, Joko Sutrisno, Rakhel Apriliana and Kevin Monthiego Horax

Page No:46-53

The effect of increasing blood glucose level on several atherogenic factors with biomolecular in diabetes mellitus type II patients

Eti Yerizel and Asman Manaf

Page No:54-58

The purification of waste cooking oil based on lipid profiles measurements by using skin of *Salacca zalacca*

Ermir Girsang, Agung A Kiswandon, Refi Ikhtiar, Hermansyah Aziz, Zulkarnain Chaidir and Rahmiana Zein

Page No:59-65

Endophytic fungi isolated from *Sambiloto* (*Andrographis paniculata* Nees) as a source of fungal lipid production

Elfita, Muharni and Munawar

Page No:66-69

The effect of the calcinations temperature during synthesis of TiO₂-Fe₃O₄-bentonite as photocatalyst material

Emma Savitri, Restu Kartiko Widi and Arief Budhyantoro

Page No:70-75

Separation of inorganic anion from biomaterial using methacrylate-based column in ion chromatography capillary system

Hidayat, Rahmiana Zein, Edison Munaf, Lee Wah Lim and Toyohide Takeuchi

Page No:76-80

The removal of Cr(VI) with *Dimocarpus longan* as a low cost biosorbent

Florenly, Reflikhtari, Hermansyah Aziz, Syafrizayanti and Rahmiana Zein
Page No:81-88

Characterization and utilization of kepok banana bark powder (*Musa balbisiana* Colla) as absorbent of metal ions Pb(II) & Cd(II) in aqueous solution

Henni Nengsih, Zilfa and Refilda Suhaili
Page No:89-93

Biosorption of cadmium ion from aqueous solutions by low-cost soybean waste (*Glycinemax*)

Harmiwati, Salmariza, Desi Kurniawati, Intan Lestari, Edison Munaf, Reni Desmiarti and Rahmiana Zein
Page No:94-100

The effect of banana starch concentration on the properties of chitosan-starch bioplastics

Lanny Sapei, Karsono Samuel Padmawijaya, Okky Sijayanti and Petrus Jaya Wardhana
Page No:101-105

Extraction technique to separate kaempferol from Soursop (*Annonamuricata*) leaves

Irmanida Batubara, Suminar Setiati Achmadi and Wenny Nurwendari
Page No:106-110

Equilibrium and kinetics modeling biosorption of Zn(II) in aqueous solution using durian (*Duriozibethinus*) seed as low-cost biosorbent

Intan Lestari, Salmariza Sy, Harmiwati, Desy Kurniawati, Admin Alif, Edison Munaf, Rahmiana Zein and Hermansyah Aziz
Page No:111-122

Model of pollution impact for policy design in controlling dioxin/furan emission (Case study: Metal ferrous and nonferrous industry in Cilegon)

Lina Warlina
Page No:123-134

Biosorption metal ion of Pb (II) and Cd (II) using kepok banana weevil powder (*Musa balbianacolla*)

Melati Surya Hafni, Zilfa and Refilda Suhaili
Page No:135-138

Preparation, characterization of ZnO/CoFe₂O₄ magnetic nanocomposites and activity evaluation under solar light irradiation

Rahmayeni, Devi A., Yeni Stiadi, Novesar Jamarun, Emriadi and Syukri Arief
Page No:139-146

Evaluation acute toxicity and antibacterial activity of *Penicillium* sp endophytic fungus extract of kunyit putih (*Curcuma zedoaria*) in mice (*Mus musculus* L.)

Muharni, Heni Yohandini, Fitriya and Roni
Page No:147-151

Bentonite and Bentonite-Fe₃O₄ composites as adsorbent for treatment acid mine drainage synthetic

Poedji Loekitowati Hariani, Salni and Fahma Riyanti
Page No:152-158

Development and validation of TLC densitometry method for simultaneous determination of metformin HCl and glibenclamide in tablets dosage form

Regina Andayani, Fifi Pitasari and Rusdi
Page No:159-164

Production, purification, and characterization of inulinase from dahlia rizhosphere-isolated *Aspergillus clavatus*

Saryono, Chainulfiffah A. M., Aulia Ardhi and Nova Wahyu Pratiwi
Page No:165-176

Optimization spectrophotometric determination of phosphor in soil and compost mixture

Refilda Suhaili, Jumelli Zoni Sudarnisa and Yefrida
Page No:177-182

Use of TiO₂-Fe₃O₄ pillared bentonite as photocatalyst in photodegradation of basic blue

Restu Kartiko Widi, Arief Budhyantoro and Emma Savitri

Page No:183-188

Hydrothermal synthesized Ag nanoparticles using bioreductor of gambier leaf extract (*Uncaria gambier* Roxb)

Syukri Arief, Vivi Gustia, Diana Vanda Wellia, Zulhadjri, Takayuki Ban and Yutaka Ohya

Page No:189-192

Removal of Mn (II) ions from aqueous solution by adsorption using *Terminalia catappa* fruit powder

Sofian Wijaya, Edy Fachrial, Djong Hon Tjong, Ety Yerizel, Edison Munaf and Rahmiana Zein

Page No:193-200

Antimicrobial activity and molecular characterization of endophytic fungi strain isolated from dahlia (*Dahlia variabilis*)

Saryono, Sefni Hendris, Dina Fitriyah, Christine Jose, Titania T. Nugroho and Aulia Ardhi

Page No:201-208

Biosorption of copper (II) Ions from aqueous solution by *Nothopanax scutellarium* leaves powder on batch method

Sri Wahyuni Nasution, Edy Fachrial, Eti Yerizel, Refilda and Rahmiana Zein

Page No:209-214

Effect of tumeric powder (*Curcuma domestica* Val) in feed, on the blood of local duck

Tertia Delia Nova and Yulia Yellita

Page No:215-221

Isolation and characterization of microalgae isolated from palm oil mill effluent (POME) for biodiesel feed stocks with β -carotene as co-product

Widiyanti Sekatresna, Abdi Dharma, Rahmiana Zein and Zulkarnain Chaidir

Page No:222-231

Antioxidant ability of pepino fruits (*Solanum muricatum* Aiton) in apoptotic modulation of yeast cells (*Saccharomyces cerevisiae* FNCC 3012)

Devi Ratnawati and Eni Widiyati

Page No: 232-238

The media variance of production for anti microbe homogeny from the endophyte fungi of dahlia plant seed (*Dahlia variabilis*)

Dewi Yudiana Shinta, Yusmarini, Herix Sonata MS, Hilwan Yuda Teruna and Saryono

Page No: 239-245



Use of $\text{TiO}_2\text{-Fe}_3\text{O}_4$ pillared bentonite as photocatalyst in photodegradation of basic blue

Restu Kartiko Widi*, Arief Budhyantoro and Emma Savitri

Department of Chemical Engineering, University of Surabaya (UBAYA), Raya Kalirungkut Tenggilis TG building
5th floor, Surabaya, Indonesia

ABSTRACT

Surfactant molecule pillared bentonite was prepared and used as porous support for synthesis of $\text{TiO}_2\text{-Fe}_3\text{O}_4$ based photocatalyst with varying TiO_2 and Fe_3O_4 loading. The raw bentonite was obtained from Pacitan, Indonesia. The kind of surfactants which used on this research was Tetra Methyl Ammonium salt. The loading variations of $\text{TiO}_2\text{-Fe}_3\text{O}_4$ in this experiment were 1:3 and 3:1. The synthesis of the photocatalytic materials have been carried out by sol-gel method and followed by calcination. The temperature of calcination was at 500, 600, 700 and 800°C. The physicochemical properties of $\text{TiO}_2\text{-Fe}_3\text{O}_4$ bentonite samples were characterized by X-ray diffraction. Photocatalytic activity of the materials was evaluated by basic blue photo degradation using UV light. The titania and magnetite content in the materials significantly influenced the physicochemical properties and catalytic activity. Optimum TiO_2 and Fe_3O_4 loading in the material produced crystalline of anatase and magnetite furthermore enhanced basic blue degradation.

Keywords: TiO_2 , Fe_3O_4 , bentonite, photocatalytic, basic blue degradation

INTRODUCTION

It is well known that the dye effluents, which may be from dyestuff manufacturing and textile industries, may exhibit toxic effects on microbial populations and can be toxic and/or carcinogenic to mammalian animal [1]. Because of their resistance to degradation, they might be present on wastewater at substantial quantity. Though not particularly toxic, dyes might be harmful to human beings and hazardous to aquatic organisms; not to mention their adverse aesthetic effects as they are quite visible. The presence of color also reduces aquatic diversity by blocking the passage of light through water [2].

Various measures have been developed against sources of air, water and soil pollution and have proven effective to a certain degree. However, there are still some unsolved problems with regards to air pollution and yet other new problems such as hazardous chemical substances have arisen. In addition to developing economically feasible measures for energy and resource conservation that are applicable to small to medium size sources of pollution, it is necessary to develop technology to directly clean polluted environments (environmental purification technology). A photocatalyst can break down and remove a variety of environmental (load) pollutants at room temperature by oxidation, using sunlight or artificial light as an energy source.

Nowadays, photocatalytic degradation of organic contaminants is attracting extensive interest for their potential applications in remedying environmental pollution [3–7]. Titania (TiO_2) is a well known material in photocatalysis.