

Editorial Board

Editor-in-Chief

Prof. M. S. Bhatia, India
(Bharati Vidyapeeth College of Pharmacy, Kolhapur, India)
Email: manish.bhatia@bharatividyaapeeth.edu
Email: editor@ijppsjournal.com

Associate Editors

Dr. Avijeet Jain, India
(Shri Sathya Sai Institute of Pharmaceutical Sciences, Bhopal, India)
Email: avijeet_9826275340@rediffmail.com

Diah Ayu Maharani
Department of Preventive and Public Health, Dentistry Faculty of Dentistry, University of Indonesia
Email: raniabdillah@gmail.com

Dr. Subhash C Mandal, India
(Department of Pharmaceutical Technology, Jadavpur University, Kolkata, India)
Email: subhashmandal@yahoo.com

Dr. Lokesh Deb, India
(Medicinal Plants and Horticultural Resources Division, Institute of Bioresources and Sustainable Development (IBSD), Department of Biotechnology, Government of India, Takyelpat Institutional Area, Imphal, Manipur, India)
Email: lokesh_deb@rediffmail.com

Dr. Wong Tin Wui, Malaysia
(Non-Destructive Biomedical and Pharmaceutical Research Center, University of Technology MARA, Malasiya)
Email: wongtinwui@yahoo.com

Assistant Editors

Dr. Idress Hamad Attittala, Libya
(Omar El-Mukhtar University, Faculty of Science, Botany Department, El-Beida, Libya)
Email: idressattitalla2004@yahoo.com

Dr. Alok Nahata, Malaysia
(Alor Star, Malaysia)
Email: aloknahata@gmail.com

Executive Editor

Mr. Niranjana Pathak, India

(Dept. of Pharmaceutical Sciences, Dr H S Gour Central University, Saugor, India)

Email: niranjanpathaklib@gmail.com

Editorial Board Members

Dr. Furhan Iqbal

Bahauddin Zakariya University Multan, Pakistan

Dr. Ebtessam Ahmed Mohammed Essa

Department of Pharmaceutical Technology,
Faculty of Pharmacy, Tanta University, Tanta,
Egypt

Dr. Syed Muhammad Farid Hasan

Faculty of Pharmacy, University of Karachi,
Karachi, Pakistan

Dr. Abdel Raheim Mohammed Ahmed Donia

College of Pharmacy – Salman Bin Abdul Aziz
University, Egypt

Dr. Pranay Jain

Institute of Engineering & Technology,
Kurukshetra University, Kurukshetra, Haryana,
India

Dr. Dr. Niaz Ali

Institute of Basic Medical Sciences, Khyber
Medical University, Peshawar, Pakistan

Dr. M. Saeed Arayne

Chairman, Department of Chemistry, University of
Karachi, Pakistan

Dr. Wanzala Wycliffe

School of Pure and Applied Sciences, South
Eastern Kenya University, Kenya

Dr. Mayuree Tangkiatcumjai

Faculty of Pharmacy, Srinakharinwirot University,
Ongkharak, Nakhonayok, Thailand

Dr. Anup Naha

Dept. of Pharmaceutic, MCOPS, Manipal,
Karnataka, India

Dr. Jagdish Labhubhai Kakadiya

Indubhai Patel College of Pharmacy and Research
Centre, Petlad-Khambhat Road, Dharmaj, Anand,
Gujarat, India

Dr. Maha Ali Eissa Ahmed

Department of Pharmacology, Faculty of
Pharmacy, MISR University for Science and
Technology (MUST), Giza Governorate, Egypt.

Dr. Rajesh Mukthavaram

Health Science Drive, University of California, San

Dr. Javed Intekhab

G. F. College (Rohilkhand University),
Shahjahanpur, U.P., India

Dr. Manish P. Patel

Dept. of Pharmaceutics and Pharmaceutical
Technology, Nootan Pharmacy College, Visnagar,
Gujarat, India

Dr. Narendra Babu Shivanagere Nagojappa

J.N. Medical College, KLE University, Belgaum,
Karnataka, India

Dr. C. Chellaram

Vel Tech Multi Tech Engg. College, Chennai, India

Dr. Mehdi Shafiee Ardestani

Department of Medicinal Chemistry and
Radiopharmacy, Tehran University of Medical
Sciences, Tehran, Iran

Dr. Amal Amin Mohamed

Plant Biochemistry Department; Agriculture
Division -National Research Center, Dokki, Cairo,
Egypt

Dr. Rabab Kamel Mahmoud

National Research Center, Cairo, Egypt

Dr. Syed Adnan Ali Shah

Universiti Teknologi MARA (UiTM), Puncak Alam
Campus, Bandar Puncak Alam, Selangor D. E.,
Malaysia

Dr. Sat Pal Singh Bisht

Roland Institute of Pharmaceutical Sciences
Berhampur, Orissa, India.

Dr. Shahu Ingole

Smt. Kashibai Navale Medical College & Hospital,
Pune India

Dr. Gina Samy El-Feky

Pharmaceutics Department, Faculty of Pharmacy,
Modern Science and Arts University, Egypt

Dr. Abdalla Ahmed Elbashir Ahmed

Khartoum University, Sudan

Dr. Yesudass Dominic Ravichandran

School of Advanced Sciences, VIT University,
Vellore, Tamil Nadu, India

Diego, Lajolla, CA, California, USA

Dr. Saifullah Khan
International Islamic University, Malaysia

Norhaniza Aminudin
Institute of Biological Sciences, Faculty of Science,
University of Malaya, Kuala Lumpur, Malaysia.

Dr. Shazia Jamshed
Kulliyyah of Pharmacy, International Islamic
University Malaysia (IIUM), Kuantan, Pahang,
Malaysia

Dr. Mayuree Tangkiatkumjai
Department of Clinical Pharmacy and Social
Pharmacy Faculty of Pharmacy, Srinakharinwirot
University, Nakhonnayok, Thailand

Dr. İsmail Murat Palabiyik
Faculty of Pharmacy, University of Ankara,
Tandoğan, Ankara, Turkey

Nadeem A. Kizilbash
Faculty of Medicine, Northern Border University
Arar, Saudi Arabia

Dr. Debajit Kalita
Department of Botany, Morigaon College, Assam,
India

Dr. Seyed Mohammad
Department of Biology, Faculty of Basic Sciences,
University of Mazandaran, Babolsar, Iran

Dr. Shalini Sivadasan
Faculty of pharmacy, AIMST University, Semeling,
Kedah, Malaysia

Dr. Sujimon Tanvichien
Srinakharinwirot University Nakornayok Rd. A.
Ongkarak T.Ongkarak, Nakornayok, Thailand

Prof. Dr.-Ing. habil. Dr. h. c. Lothar Mörl
Institute für Apparate- und Umwelttechnik Otto-
von-Guericke-Universität Magdeburg, Germany

Dr. V. Ravichandran
Faculty of Pharmacy, AIMST University, Semeling,
Kedah, Malaysia

Dr. Zahid Hussain
Department of Pharmaceutics, Faculty of
Pharmacy, Universiti Teknologi MARA, Puncak
Alam Campus, Malaysia

Dr. Ajay Kumar Meena
Department of AYUSH, Ministry of Health &
Family Welfare, Government of India, India

Dr. Ashish C. Suthar
Herbal R & D, Piramal Life Sciences Ltd., Mumbai,
India

Dr. Seema Akbar
Research Institute of Unani Medicine, The
University of Kashmir Campus, Srinagar, J. & K.,
India

Dr. P. Thillai Arasu
Department of Chemistry, Wollega University,
Nekemta, Ethiopia

Dr. Sooraj S. Nath
Safi Institute of Advanced Study, Kozhikode, India

Dr. Erum Shireen
Dept. of Biochemistry, University of Karachi,
Pakistan

Dr. M. M. Gupta
School of Pharmacy, Faculty of Medical Sciences,
The University of The West India, India

Dr. Najma Sultana
United Biotechnologies, Karachi, Pakistan

Dr. Sivakumar P
Department of Petroleum Engineering, JCT
College of Engineering and Technology, Pichanur,
Tamil Nadu, India

Dr. Evren Algin Yapar
Department in Ministry of Health, Turkish
Medicines and Medical Devices Agency, Ankara,
Turkey

Dr. Vishal Vijay Pandey
Jayawantrao Sawant College of Pharmacy &
Research, Hadapsar, Pune, India

Dr. Shamkuwar Prashant Babarao
Government College of Pharmacy, Thiba Palace,
Ratnagiri, India

Dr. S. K. Starling
Department of Chemistry, Mewar University
Chittorgarh, Rajasthan, India

Dr. Syed Sajjad Hussien
Manipal College of Pharmaceutical Sciences,
Manipal University, India

Dr. Ahmed Osman
Department of Psychology, Faculty of Education,
Assiut University, Malaysia

Dr. Abdel-Tawab Halim Mossa Abd El-Aziz
Department of Pesticide Chemistry, National
Research Centre (NRC) Dokki, Cairo, Egypt

Dr. V. Vinod Prabhu
Department of Biochemistry, University of
Madras, Guindy campus, Tamil Nadu, India

Dr. Ching Siew Mooi
University Putra, Malaysia

Dr. Manish A. Rachchh
Pharmacological Research and IPR University
road, Rajkot, Gujarat, India

Kiran Kumar Chereddy
Manager at Novartis Pharma AG
Postfach 4002, Basel
Switzerland

Dr. Fahd M. Abd Al Galil
Department of Zoology, Faculty of Applied
Science, Thamar University, Yemen

Dr. Priyanka Bhatt
Department of Pharmaceutical Sciences, College
of Pharmacy, University of South Florida, USA

Dr. Beril Anilanmert
Istanbul University-Cerrahpasa Institute of
Forensic Sciences, Cerrahpasa/Istanbul

Dr. Andleeb Shahzadi
Istanbul University Cerrahpasa-Fatih Istanbul,
Turkey 34098

Dr. Mohd Masih Uzzaman Khan
Unaizah College of Pharmacy Unayzah 56264,
Saudi Arabia

Dr. Asif Husain
Jamia Hamdard University, New Delhi, India

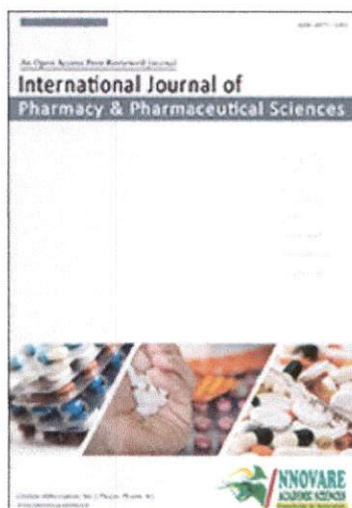
Dr. Muhammad Shahzad Aslam
School of Bioprocess Engineering, Universiti
Malaysia Perlis, Kompleks Pusat Pengajian
Jejawi, Arau, Perlis

Dr. Gláucio Diré Feliciano
State University Center Foundation of the West
Zone / Rio de Janeiro, Brazil

Dr Dilipkumar Pal
Department of Pharmaceutical Sciences, Guru
Ghasidash Vishwavidyalaya, Bilaspur, C.G., 495
009, India

Ali Abdullah Ali Al-yahawi
Assistant Professor of Clinical Pharmacy &
Therapeutics, Yemen

Dr. Maha Zaki Rizk
National Research Center, Therapeutic Chemistry
Dept., National Research Center, Dokki, Cairo,
Egypt



Online ISSN: 0975-1491

Print ISSN: 2656-0097



Journal Metrics 2018

Source Normalized Impact per Paper (SNIP): 2.029

SCImago Journal Rank (SJR): 0.23

ISSN: 0975-1491

**International Journal of
Pharmacy and...**



Visitor No. 107894

[Our Journals](#) || [Open Access Policy](#) || [Publication & Peer Review Policy](#) || [Publication Ethics](#)

The publication is licensed under a [Creative Commons License \(CC BY\)](#). [View Legal Code](#)

Copyright © 2018 All Rights Reserved, **Innovare Academic Sciences** | Powered By **CyberDairy**

INTERNATIONAL JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES

Volume 6 Issue 6 2014

Review Articles

A REVIEW ON SOLUBILITY ENHANCEMENT USING HYDROTROPIC PHENOMENA V. SAMPATH KUMAR, C. RAJA, C. JAYAKUMAR	1-7
PERCUTANEOUS DRUG DELIVERY SYSTEMS FOR IMPROVING ANTIFUNGAL THERAPY EFFECTIVENESS: A REVIEW MAXIMILIANO GLUJOY, CLAUDIA SALERNO, CARLOS BREGNI, ADRIANA M. CARLUCCI	8-16
ANALYTICAL METHODS FOR TAXANES QUANTIFICATION IN DILUTED FORMULATIONS AND BIOLOGICAL SAMPLES AND THEIR APPLICATIONS IN CLINICAL PRACTICE RAQUEL A. PALMAS, JOAQUIM MONTEIRO, PAULA FRESCO	17-23
RISK-BASED MODELLING IN MONITORING THE QUALITY OF PHARMACEUTICAL PRODUCTS AMJAD M IDRIES, KAMAL E IBRAHIM	24-28
DIFFERENT MODELS USED TO INDUCE DIABETES: A COMPREHENSIVE REVIEW VINEETA TRIPATHI, JANESHWER VERMA	29-32
FACTORS INFLUENCING PROSTATE CANCER SANDEEP SINGH, RAGUVARAN RRAJKUMAR K	33-35
ANALYTICAL METHODOLOGIES FOR DETERMINATION OF CILNIDIPINE: AN OVERVIEW K.S. KOKILAMBIGAI, K.S. LAKSHMI	36-38

Case Study

RARE BUT REALITY OF METHYL METHACRYLATE IN DENTISTRY- A CASE STUDY NAVEEN B H. K R KASHINATH. MYTHRI H. NAUSHEEN HAJIRA.	39-40
---------------------------------------------------------------------------------------------------------------------------------------------	-------

Research Articles

OPTIMIZATION & SCREENING OF DIFFERENT FILM FORMING POLYMERS AND PLASTICIZERS IN FAST DISSOLVING SUBLINGUAL FILM FRENY HIRPARA, SUJIT KUMAR DEBNATH, S SAISIVAM	41-42
ANTIOXIDANT AND ANTI-INFLAMMATORY ACTIVITY OF AQUEOUS AND METHANOLIC EXTRACTS OF RHIZOME PART OF <i>DRYNARIA QUERCIFOLIA</i>(L.) J. SMITH BANANI DAS, MANABENDRA DUTTA CHOUDHURY, AMITABHA DEY, ANUPAM DAS TALUKDAR, KH. NONGALLEIMA, LOKESH DEB	43-49
ANTIOXIDANT POTENTIAL OF ZINGIBER NIMMONII (J. GRAHAM) DALZELL ASSAMAKANTAKATH FINOSE, VELLIYUR KANNIAPPAN GOPALAKRISHNAN	50-52
IMPROVED SKIN PERMEABILITY OF DL-ALPHA-TOCOPHEROL IN TOPICAL MACRO EMULSIONS D. NEDRA KARUNARATNE, AROSHA C. DASSANAYAKE, K. M. GEETHI K. PAMUNUWA, VERANJA KARUNARATNE	53-57
INHIBITORY EFFECTS OF ACTIVE CONSTITUENTS AND EXTRACTS OF <i>ANDROGRAPHIS PANICULATA</i> ON UGT1A1, UGT1A4, AND UGT2B7 ENZYME ACTIVITIES S. ZAINAL ABIDIN, W. L. LIEW, S. ISMAIL, K. L. CHAN, R. MAHMUD	58-66
STUDY THE HEALING EFFECT OF COLLAGEN HYDROLYSATE FOR THE TREATMENT OF BONE TAIL FRACTURE IN MICE MAIADA M AL-MOUSILLY, INAS S ALAJELI, LOAY K ABDULRAHMAN	67-71
QUALITATIVE AND QUANTITATIVE ESTIMATION OF BIOACTIVE COMPOUNDS IN MIMOSA HAMATA RICHA SAXENA RICHA SHARMA, BAMKIN CHANDRA NANDY, NAKULESHWAR DUT JASUJA	72-75
COMPARATIVE EVALUATION OF ANTIMICROBIAL EFFICACY OF TWO COMMERCIALY AVAILABLE DENTIFRICES (FLUORIDATED AND HERBAL) AGAINST SALIVARY MICROFLORA RAHUL R. DESHPANDE, PRIYANKA KACHARE, GAUTAMI SHARANGPANI, VIVIAN K. VARGHESE, SNEHA S BAHULKAR	72-74
ANTI-INFLAMMATORY AND ANTIMICROBIAL ACTIVITIES OF STEROIDS AND TRITERPENES ISOLATED FROM AERIAL PARTS OF <i>JUSTICIA ACUMINATISSIMA</i> (ACANTHACEAE) GEONE MAIA CORRÊA, VIVIANE GOMES DA COSTA ABREU, DÉBORA ALOIS DE ABREU MARTINS, JACQUELINE APARECIDA TAKAHASHI, HUMBERTO DE SOUZA FONTOURA, DENISE CARMONA CARA, DORILA PILÓ-VELOSO, ANTÔNIO FLÁVIO DE CARVALHO ALCÂNTARA	75-81
THE STUDY OF BIOMETRIC AND VOLATILE OIL QUANTITY OF SAGE PLANT (<i>SALVIA OFFICINALIS</i>) AS MEDICINAL PLANT AFFECTED BY NITROGEN AND PHOSPHORUS FERTILIZERS IBRAHIM S. ABAAS	82-83

INVESTIGATION OF NEW ANTIMICROBIAL AND ANTIOXIDANT ACTIVITIES OF BRASSICA RAPA L	84-88
AMIRA MOHAMMED BELTAGY	
DISSOLUTION STUDY OF BACTERIAL CELLULOSE (NATA DE COCO) FROM LOCAL FOOD INDUSTRY: SOLUBILITY BEHAVIOR & STRUCTURAL CHANGES	89-93
MANISHA PANDEY, MUHAMMAD MUSTAFA ABEER, MOHD CAIRUL IQBALMOHD AMIN	
CHITOSAN GALLIC ACID MICROSPHERE INCORPORATED COLLAGEN MATRIX FOR CHRONIC WOUNDS: BIOPHYSICAL AND BIOCHEMICAL CHARACTERIZATION	94-100
RAKESH WARY, SARANYA SIVARAJ, GURUKARTHIKEYAN, RAJINISH KUMAR PATHAK, SAI LOKESH MARI SURAJ, GAYATHRI DASARARAJU, GOMATHI KANNAYIRAM	
EVALUATION OF ANTIDEPRESSANT EFFECT OF CHRONIC ADMINISTRATION OF TRAMADOL ALONE AND IN COMBINATION WITH FLUOXETINE IN LOW DOSES IN ALBINO MICE	101-105
SIRISHA G, RAHUL PRAKASH B, USHA NS, MADHU DHAKHAYANI K	
DEVELOPMENT OF HPTLC METHOD FOR DETERMINATION OF BROMPHENIRAMINE MALEATE AND PHENYLEPHRINE HYDROCHLORIDE TABLETS	106-109
WICHARN JANWITAYANUCHIT, PUANGKAEW LUKKANATINAPORN	
IMPACT OF PEM ON HEART STRUCTURE	110-114
AMAL S. AL-SAMERRAEE, JASSIM M. THAMER	
FREE-RADICAL SCAVENGING ACTIVITY SCREENING OF SOME INDONESIAN PLANTS	115-117
ACHMAD FUAD HAFID, ISMAIL, SAMUEL WARDIYANTO, LIDYA TUMEWU, ABDUL RAHMAN, ATY WIDYAWARUY ANTI	
ANTIMICROBIAL ACTIVITY OF BINARY AND TERNARY COMPOSITES OF CHITOSAN AMENDED WITH NYLON 6 AND MONTMORILLONITE CLAY	118-120
N. PRAKASH, RAJKUMAR E, SUDHA P.N, UDAYA PRAKASH N.K	
SYNERGISTIC ANTIBACTERIAL EFFECT OF MYRTUS COMMUNIS AND THYMUS VULGARIS ESSENTIAL OILS FRACTIONAL INHIBITORY CONCENTRATION INDEX	121-124
MOULAY SADIKI, MOUNYR BALOUIRI, HASSAN BARKAI, HAJAR MAATAOUI, SAAD IBNSOUD KORAICHI SOUMYA ELABED	
IN VITRO ANTIMALARIAL ACTIVITY SCREENING OF SEVERAL INDONESIAN PLANTS USING HRP2 ASSAY	125-128
ATY WIDYAWARUYANTI, ARANNYA PUSPITA DEVI, NIKE PATRIA, LIDYA TUMEWU, INDAH S TANTULAR, ACHMAD FUAD HAFID	
SIMULTANEOUS DETERMINATION OF QUERCITIN AND AMENTOFLAVONE IN METHANOLIC LEAF EXTRACT OF SEMECARPUS ANACARDIUM (LINN.F.) BY REVERSE PHASE LIQUID CHROMATOGRAPHY	129-134
PARAG A. PEDNEKAR, VANITA KULKARNI, BHANU RAMAN	
DEVELOPMENT AND VALIDATION OF RP-HPLC METHOD FOR SIMULTANEOUS DETERMINATION OF METFORMIN AND MIGLITOL IN BULK AND PHARMACEUTICAL FORMULATION	135-141
B. BHOOMAIAH, A. JAYA SHREE	
SYSTEMIC AND LOCAL ANTI-INFLAMMATORY ACTIVITY OF AQUEOUS LEAF EXTRACT FROM JATROPHA GOSSYPIIFOLIA L. (EUPHORBIACEAE)	142-145
JULIANA FÉLIX-SILVA, JACYRA ANTUNES DOS SANTOS GOMES, LEONARDO MEDEIROS DE QUADROS BARBOSA, ILANNA TAINÁ MEDEIROS GURGEL PINHEIRO, LUIZ ALBERTO LIRA SOARES, ARNÓBIO ANTÔNIO DA SILVA-JUNIOR, SILVANA MARIA ZUCOLOTTI, MATHEUS DE FREITAS FERNANDES-PEDROSA	
THE EFFECTIVITY OF CAPTOPRIL, LOSARTAN, AND AMLODIPINE ON HYPERTENSION IN RAT MODEL OF GENTAMICIN-INDUCED RENAL FAILURE	146-151
N. SULISKA, E.Y SUKANDAR	
EVALUATION AND CHARACTERIZATION OF PURIFIED HIBISCUS ESCULENTUS L. POLYSACCHARIDE AS A PHARMACEUTICAL EXCIPIENT AND MUCCADHESIVE AGENT	152-160
DEB P, DASH S, MURTHY PN	
Review Article	
A REVIEW ON THE IMPACT OF THE ENVIRONMENTAL ADVERSITIES ON VARIOUS DEVELOPMENTAL DISORDERS OF BRAIN IN CHILDREN	161-164
SALAHUDDIN MOHAMMED, BIRHANU MOTBAYNOR, DEMISSEWERIHUN HAILE	
Research Articles	
DEVELOPMENT AND EVALUATION OF FAST DISINTEGRATING EXTENDED RELEASE TABLETS CONTAINING ANTIHYPERTENSIVE DRUG"	165-174
HADEL A. ABO ENIN	
THE PROTECTIVE EFFECTS OF SWIETENIA MACROPHYLLA KING (SEEDS& ENDOCARPS) AQUEOUS-METHANOLIC EXTRACT ON PANCREATIC ISLETS HISTOLOGY IN STREPTOZOTOCIN-INDUCED DIABETIC RATS	175-179
HANAN KUMAR G, NUR HAYATI J M, N D SALIH, A R NORZEIN, RM NOAH	
IN-VIVO PHARMACOLOGICAL INVESTIGATIONS OF BARK EXTRACTS OF CARISSA CARANDAS	180-185
FARIHA ALAM, MOHAMMAD SHAHRIAR & MOHIUDDIN AHMED BHUIYAN	
COLD PRESSED VIRGIN COCONUT OIL FROM FULL FAT COCONUT FLAKES A FUNCTIONAL OIL	186-190
MANIKANDAN ARUMUGAM, MEERA RAMAN, KANNAN EAGAPPAN	
ANTI-ULCER ACTIVITY OF ALOE VERA JUICE AND ALOE VERA AND AMLA FRUIT COMBINED JUICE IN ETHANOL INDUCED ULCERATED RATS	191-197
S. GOPINATHAN, N. RAMEELA	
GENOMIC DNA ISOLATION FROM HUMAN WHOLE BLOOD SAMPLES BY NON ENZYMATIC SALTING OUT METHOD	198-199
SAJJA SUGUNA, NANDAL D H, SURESH KAMBLE, AMBADASU BHARATHARAHUL KUNKULOL,	
PHARMACOPHORE MODELING AND QSAR STUDY OF THIENO [3, 2 - B] PYRIMIDINE ANALOGS AS VEGFR-2 INHIBITORS	200-207
PBABHU K, MANOJ KUMAR M, GOPALAKRISHNAN VK	
EVALUATION OF ANTIOXIDANT POTENTIAL AND PHYTOCHEMICALS OF MORINA LONGIFOLIA	208-212
SAJAD YOUSUF, R.K. BACHHETI, ARCHANA JOSHI, ABHISHEK MATHUR	

HIGH FREQUENCY CALLUS INDUCTION AND PLANT REGENERATION FROM SHOOT TIP EXPLANTS OF SORGHUM BICOLOR L. MOENCH	213-216
AMALI, P., KINGSLEY, S. J., IGNACIMUTHU, S.	
SIMULTANEOUS ESTIMATION OF SALBUTAMOL AND KETOTIFEN IN TABLET DOSAGE FORM BY RP-HPLC USING ULTRAVIOLET DETECTION AND ITS APPLICATION FOR DISSOLUTION STUDY	217-221
SNEHAL CHOUDHARI, SAVITA S YADAV, JANHAVI R RAO	
IN SITU ISOLATION AND CHARACTERIZATION OF NANO-USNIC ACID FOR MEDICAL APPLICATIONS	222-226
SNEHA MARIA MARIAWILLIAM, ARUL PRAKASH FRANCIS, THIYAGARAJAN DEVASENA	
IN VITRO ANTIOXIDANT ACTIVITY OF METHANOLIC EXTRACT OF SHOREA ROBUSTA IN HEPATOCYTES	227-230
P. SUGANYA, R. NANDHINI, T. JEYADOSS, S. VELAVAN	
ABSORPTION CORRECTION METHOD FOR SIMULTANEOUS ESTIMATION OF MOXONIDINE AND AMLODIPINE BESYLATE IN COMBINED PHARMACEUTICAL FORMULATION	231-235
NEHA M, JIGNESH S.S, DILIP G.M	
STABILITY-INDICATING RP-HPLC METHOD FOR THE SIMULTANEOUS ESTIMATION OF AZILSARTAN MEDOXOMIL AND CHLORTHALIDONE IN SOLID DOSAGE FORMS	236-243
S. NAAZNEEN, A. SRIDEVI	
DESIGN, SYNTHESIS, MOLECULAR DOCKING AND ANTIBACTERIAL EVALUATION OF NOVEL N-(6, 11-DIOXO-DIHYDRO-5H-BENZO [B] CARBAZOL-2YL) BENZAMIDE DERIVATIVES AS POTENT ANTIBACTERIAL AGENTS	244-249
P. RAVI CHANDIRAN, D. PREMNATH, S. VASANTH KUMAR	
EVALUATION OF ANTIDEPRESSANT ACTIVITY OF LEAF EXTRACTS OF HOLOPTELEA INTEGRIFOLIA (ROXB) PLANCH IN EXPERIMENTAL ANIMALS	250-253
RAVINDRA C. SUTAR, SANJAY B. KASTURE, V.K. KALAICHELVAN	
DESIGN AND SYNTHESIS OF NOVEL QUINOLINE 3-CARBOHYDRAZONE DERIVATIVES FOR THEIR ANTIMICROBIAL AND ANTIOXIDANT ACTIVITY	254-258
SRINUBABU MADDELA, MAKULA AJITHA, MURALIDHARAN VENUGOPAL, RAMBABU MADDELA	
FORMULATION AND IN VITRO EVALUATION OF DICLOFENAC SODIUM GEL	259-261
ENKELEJDA GOCI, ENTELA HALOCI, SKERDILAJD XHULAJ, LEDJAN MALAJ	
EXPRESSION AND CHARACTERIZATION OF RECOMBINANT HUMAN ANTI-THROMBIN IN SACCHAROMYCES CEREVISIAE	262-265
MAHESWARA REDDY MALLU, SANDEEP VEMULA, SRINIVASA REDDY RONDA	
COMPARATIVE EFFECT OF ANGIOTENSIN II TYPE I RECEPTOR BLOCKERS ON BLOOD GLUCOSE CONCENTRATION AND OXIDATIVE STRESS IN STREPTOZOTOCIN- INDUCED DIABETIC RATS	266-269
SNIGDHA SENAPATY, BHABAGRAHI RATH, JYOTIRMOYEE JENA, SASHI B. BISWAL	
PATTERNS OF DRUG THERAPY AMONG DIABETIC HYPERTENSIVE PATIENTS WITH OTHER COMPLICATIONS	270-277
DR. ZAKIA HUSSAIN, DR. AMTUL SANA, SALAHUDDIN MOHAMMED, MOHAMMED ABDUL RAZZAQ	
ANTIBACTERIAL AND SYNERGISTIC ACTIVITY OF ETHANOLIC AJWAIN (TRACHYSPERMUM AMMI) EXTRACT ON ESBL AND MBL PRODUCING UROPATHOGENS	278-284
MOBASHSHERA TARIQ, MEGHANA GORE AND ARUNA K	
ISOLATION AND CHARACTERISATION OF ANTIMICROBIAL COMPOUND FROM FRUITS OF ANTHOCEPHALUS INDICUS A. RICH	285-291
SANADHYA IAND DURVE A	
ANTI-INFLAMMATORY ACTIVITY OF PLANTAGO EROSA WALL EXTRACTS IN RATS	292-295
MAXILLINE D. MARAK, A. SUBHALAXMI, R. K. BHARATI, JULIE BIRDIE WAHLANG, DHRITI KR. BRAHMA	
DEVELOPMENT AND EVALUATION OF EXTENDED RELEASE ETHYLCELLULOSE BASED MATRIX TABLET OF DICLOFENAC SODIUM	296-301
KOMAL GOSWAMI, GAURAV KHURANA, RAKESH KUMAR MARWAHA, MINAKSHI GUPTA	
VALIDATED ZERO ORDER AND FIRST ORDER DERIVATIVE SPECTROPHOTOMETRIC METHODS FOR INVITRO ANALYSIS OF TENOFOVIR DISOPROXIL FUMARATE TABLETS USING AZEOTROPIC MIXTURE	302-304
M HIMAJA, J KALPANA, C ANBARASU	
PROTECTIVE ACTION OF TINOSPORA CORDIFOLIA EXTRACT AGAINST RADIATION INDUCED BIOCHEMICAL ALTERATIONS IN LIVER	305-311
PRIYANKA SHARMA, PRADEEP K GOYAL	
PROCESS DEVELOPMENT AND OPTIMIZATION FOR MOISTURE ACTIVATED DRY GRANULATION METHOD FOR LOSARTAN POTASSIUM TABLETS	312-317
B.VENKATESWARA REDDY, K.NAVANEETHA, K.VENKATA RAMANA REDDY	
SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL ACTIVITY OF SOME NOVEL SCHIFF AND MANNICH BASES OF ISATIN	318-322
K. MEENAKSHI, N. GOPAL, M. SARANGAPANI	
EFFECT OF CROTALUS ATROX VENOM ON PERITONEAL AND SPLEEN CELL AND MEDIATORS PRODUCTION	323-328
L. BARBOSA NAVARRO, F. GONZALEZ CLARA, L. ARTEAGA FIGUEROA, R. ZUCATELLI MENDONCA ^o , VERA L. PETRICEVICH	
ANTIDIARRHOEAL EVALUATION OF AQUEOUS EXTRACTS OF GARCINIA INDICA & CUMINUM CYMINUM AND A POLYHERBAL FORMULATION	329-331
KIRAN G. GHANEKAR, VAISHALI J. DIXIT	
A STUDY ON DRUG USE PATTERN AND ADVERSE DRUG REACTIONS OF ANTI-PSYCHIATRIC MEDICATIONS IN A PSYCHIATRY SPECIALIZED HOSPITAL	332-334
SARUMATHY S, MENAKA K, SAMUEL GIDEON GEORGE P, RAVICHANDIRAN V	
HIGH-PERFORMANCE LIQUID CHROMATOGRAPHIC DETERMINATION OF COLCHICINE IN PHARMACEUTICAL FORMULATIONS AND BIOLOGICAL FLUIDS	335-337
BABU GIRIYA GOWDA	
PROPERTIES AND FLAVONOIDS CONTENT IN PROPOLIS OF SOME EXTRACTION METHOD OF RAW PROPOLIS	338-340
NIKEN PUJIRAHAYU, HALIMAHTUSSADYAH RITONGA, ZAKIAH USLINAWATY	
SYNTHESIS, CHARACTERIZATION AND EVALUATION OF PYRIDOPYRIMIDINE CARBOXYLATE DERIVATIVES AS POTENTIAL ANTIMICROBIAL AND ANTICANCER AGENTS	341-345

ABHAY KUMAR VERMA, ARUN KUMAR SINGH M. MANAUWARUL ISLAM	
A PILOT STUDY ON THE DETERMINATION OF ANTIOXIDANT POTENTIAL AND LETHAL DOSAGE OF HYDRO ALCOHOLIC FRUIT EXTRACT OF <i>TERMINALIA CHEBULA</i>	346-351
MARIAPPAN AMUTHA, ARUMUGAM GEETHA, MARIMUTHU AMUTHA	
ASSESSMENT OF PHARMACOGNOSTICAL CHARACTERS OF THE FRUIT OF <i>STEREOSPERMUM COLAIS</i> BUCH	352-356
MOHAMMED IMRAN, DR. MOHIB KHAN	
PURIFICATION AND CHARACTERIZATION OF PEDIOCIN PRODUCED BY <i>PEDIOCOCCUS ACIDILACTICI</i> NCIM 2292	357-361
BARNALI MANDAL, RANJANA CHOWDHURY, CHIRANJIB BHTATTACHAR JEE	
PRELIMINARY QUALITATIVE PHYTOCHEMICAL SCREENING AND IN VITRO HYPOGLYCEMIC POTENTIAL OF <i>ACANTHUS ILICIFOLIUS</i> AND <i>EVOLVULUS EMERGINATUS</i>	362-365
G.A.GAYATHRI & MAHALINGAM GAYATHRI	
MUCOADHESIVE BUCCAL PATCH OF CEFIXIME TRIHYDRATE USING BIODEGRADABLE NATURAL POLYMER	366-371
ASWATHY S NAIR, VIDHYA K.M, SARANYA T.R, SREELAKSHMY K.R,SREEJA C NAIR	
LOW MOLECULAR WEIGHT POLYETHYLENE GLYCOLS AS MATRIX TO OBTAIN SOLID DISPERSIONS OF SULFANILAMIDE	372-377
ALEXANDER V. GERASIMOV, MARAT A. ZIGANSHIN, VALERY V. GORBATCHUK, LIANA S. USMANOVA	
DESIGN AND EVALUATION OF A NEW FORMULATIONS OF ENALAPRIL MALEATE 20 MG TABLET IN A TIME EFFICIENT AND ON A LARGE INDUSTRIAL SCALE	378-382
RUBA KELLO, WASSIM ABDELWAHED	
HIGH PERFORMANCE THIN LAYER CHROMATOGRAPHIC METHOD WITH DENSITOMETRY ANALYSIS FOR DETERMINATION OF RIVAROXABAN FROM ITS TABLET DOSAGE FORM	383-386
DARSHNA VAGHELA, PINAK PATEL	
IN SILICO ANALYSIS TO ACCESS THE ANTIBACTERIAL EFFECT OF THIAZIDES ON PDFS: MOLECULAR DOCKING APPROACH	387-391
TARUN AGARWAL, PRERAK GUPTA, SOMYA ASTHANA, ASIF KHURSHEED	
NEUROPROTECTIVE EFFECTS OF CROMAKALIM ON CEREBRAL ISCHEMIA-REPERFUSION (IR) INJURY AND ALUMINIUM INDUCED TOXICITY IN RAT BRAIN	392-396
PITHADIA ANAND BHARAT KUMAR, SHITAL PANCHAL	
POSSIBLE CARDIO-PROTECTIVE EFFECTS OF TELMISARTAN AGAINST 5-FLUOROURACIL-INDUCED CADIOTOXICITY IN WISTER RATS	397-400
ALAA RADHI KHUDHAIR, INTESAR T. NUMAN,PHD	
DEVELOPMENT AND VALIDATION OF Q-ABSORBANCE RATIO SPECTROPHOTOMETRIC METHOD FOR SIMULTANEOUS ESTIMATION OF CILNIDIPINE AND METOPROLOL SUCCINATE IN BULK AND COMBINED DOSAGE FORM	401-407
TUSHAR K. KADIA, MR.DARSHIL B. SHAH, DR.DILIP G.M.	
STRUCTURAL, POTENTIOMETRIC AND THERMODYNAMIC STUDIES OF RHODANINE AZODYES AND THEIR METAL COMPLEXES	408-414
ADEL Z. EL-SONBATI, MOSTAFA A. HUSSIEN, ARAFA A.M. BELAL, EREENY S. LAHZY	
ACUTE & SUB-ACUTE TOXICITY STUDIES OF PHARMACOLOGICALLY ACTIVE SEABUCKTHORN LEAF EXTRACT	415-419
AMRIT KUMAR SINGH, DHARAM PAUL ATTREY, PRAKASH DEEP, SUCHITA DUBEY, TANVEER NAVED, BALGANGADHAR ROY	
ANTIBACTERIAL AND ANTI-OBESITY ACTIVITIES OF MARINE ALGAE <i>GRACILARIA CORTICATA</i> AND <i>SPIRULINA PLATENSIS</i>	420-424
KANNAN M, DHEEBA B, NAGESHWARI K, KANNAN K, VENKATESAN S	
COMPARISON OF MULTIPLEX PCR, GRAM STAIN, AND CULTURE FOR DIAGNOSIS OF ACUTE BACTERIAL MENINGITIS	425-429
MOHAMMAD AMMAR YAHIA, OMAR BALACH	
STUDIES ON THE PHYTOCHEMISTRY, SPECTROSCOPIC CHARACTERIZATION AND ANTIBACTERIAL EFFICACY OF <i>SALICORNIA BRACHIATA</i>	430-432
DEEPA SANTHANAKRISHNAN, SRIPRIYA N. SHANKAR AND BANGARU CHANDRASEKARAN	
IMMUNOMODULATORY ACTIVITY OF AQUEOUS LEAF EXTRACT OF <i>OCIMUM BASILICUM</i> LINN IN <i>CLARIAS BATRACHUS</i>	433-440
GAYATRI NAHAK AND RAJANI KANTA SAHU	
INHIBITORY EFFECT OF <i>EURYCOMA LONGIFOLIA</i> EXTRACT AND EURYCOMANONE ON HUMAN CYTOCHROME P450 ISOFORMS	441-444
PURWANTININGSIH, SABARIAH ISMAIL, ABAS HJ HUSSIN, KIT LAM CHAN	
DESIGN DEVELOPMENT AND EVALUATION OF MATRIX TABLETS OF AMBROXOL HYDROCHLORIDE: <i>IN VITRO</i> – <i>IN VIVO</i> STUDY	445-449
PRABHA SINGH, AMRITA BAJAJ, PRANJALI APSEGAONKAR	
DEVELOPMENT AND IMPLEMENTATION OF PEDIATRIC FORMULARY & DRUG THERAPY GUIDE IN A TERTIARY CARE HOSPITAL IN INDIA	450-451
AKHILA SIVADAS, S.A.ANEESH, ELEZABETH M.KOSHY, ROSHNIPR,SASIDHARAN.P	
IN VITRO CALLUS INDUCTION AND ANTIOXIDANT POTENTIAL OF <i>DECALEPIS HAMILTONII</i> (WIGHT AND ARN)	452-456
T. G. UMESH	
CYTOTOXIC ACTIVITY OF <i>LACTUCA RUNCINATA</i> DC AND <i>GYROCARPUS ASIATICUS</i> WILLD ON CANCER CELL LINES <i>IN VITRO</i>	457-460
LAKSHMI KANTA KANTHAL, AKALANKA DEY, K. SATYAVATHI, P. BHOJARAJU	
GREEN TEA (<i>CAMELLIA SINENSIS</i>) MEDIATED SYNTHESIS OF ZINC OXIDE (ZNO) NANOPARTICLES AND STUDIES ON THEIR ANTIMICROBIAL ACTIVITIES	461-465
S.R. SENTHILKUMAR, T. SIVAKUMAR	
REAL TIME COLD CHAIN MONITORING OF SIMULATED VACCINE DISTRIBUTION	466-468
CHAOWALIT MONTON, JIRAPORNCHAI SUKSAEEREE, LAKSANA CHAROENCHAI	
FORMULATION AND EVALUATION OF BILAYER BUCCAL TABLET OF SUMATRIPTAN SUCCINATE	469-475
SACHIN S. DAREKAR, S.S. KHADABADI, S.R. SHAHI	
THE EFFECT OF ENCAPSULATION ON THE <i>IN VITRO</i> ANTI-OXIDATIVE ACTIVITY OF RUTIN	476-479
PENSAK JANTRAWUT AND WARINTORN RUKSIRIWANICH	

PHARMACEUTICAL PACKAGING: CURRENT TRENDS AND FUTURE VIKAS PAREEK, DR. ALOK KHUNTETA	480-485
POTENTIAL ANTIMICROBIAL, ANTHELMINTIC AND ANTIOXIDANT PROPERTIES OF ARECA CATECHU L. ROOT ALBY ALPHONS BABY & REGI RAPHAEL K	486-489
UTEROTONIC PROPERTIES OF NYMPHAEA ALBA ON ISOLATED MYOMETRIUM MODEL ANINDYA BOSE, MOUMITA SAHOO, SUDHANSHU SEKHAR ROUT, SUDAM CHANDRA SI	490-493
EFFECT OF VIBROMIXING ON HEPATITIS B VACCINE POTENCY SUJANA PRASAD CHITTINENI, SATISH CHANDRA MAHESHWARI, RAMESH BHAGAM	494-497
EVALUATION OF THE ANTIEPILEPTIC ACTIVITY OF FELODEPINE IN ALBINO MICE KISHORE M S, PUSHPA V H, PADMAJA SHETTY K, KALABHARATHI H L, SATISH A M	498-500
NEEDLESTICK INJURIES AMONG SIXTH-YEAR PHARM. D STUDENTS DURING PHARMACEUTICAL CARE CLERKSHIPS: A SURVEY STUDY WICHAI SANTIMALEEWORAGUN	501-503
PHYSICO CHEMICAL AND PHYTOCHEMICAL EVALUATION OF AMPELOCISSUS LATIFOLIA (ROXB) PLANCH LEAVES PARAG A. PEDNEKAR, VANITA KULKARNI, BHANU RAMAN	504-507
PAY FOR PERFORMANCE (P4P): A MOTIVATION OF DRUG INFORMATION SERVICE WORK LOAD REPORT IN THUNGSONG HOSPITAL CHAOWALIT MONTON, PHATCHARAPORN SHOOMEK, JIRAPORNCHAI SUKSAEREE	508-510
TAXONOMIC STUDIES AND PHYLOGENETIC CHARACTERIZATION OF POTENTIAL AND PIGMENTED ANTIBIOTIC PRODUCING ACTINOMYCETES ISOLATED FROM RHIZOSPHERE SOILS TELUGU VARALAKSHMI, KALVA MADHANA SEKHAR AND PETLA BHASKARA BRAMHANANDHA CHARYULU	511-519
ANTI ULCEROGENIC MODELS OF SOPHORA INTERRUPTA SOLANUM PUBESCENS AND TABEBUIA ROSEA LEAVES ON INVIVO TEST MODEL IN RATS K.HEMAMALINI, A. SAMBASIVA RAO	520-521
ASSESSING THE ANTIOXIDANT POTENTIAL OF PHYLLANTHUS ACIDUS BARK EXTRACTS SHILALI K, RAMACHANDRA Y L, RAJESH K P, KUMARA SWAMY B E	522-531
SPECTROSCOPIC DETERMINATION OF TEMOZOLAMIDE IN BULK AND ITS CAPSULE DOSAGE FORM IFFATH RIZWANA, K. VANITHA PRAKASH, G. KRISHNA MOHAN	532-535
DEVELOPMENT OF TRANSDERMAL NANOEMULSION FORMULATION FOR SIMULTANEOUS DELIVERY OF PROTEIN VACCINE AND ARTIN-M ADJUVANT TRI SUCIATI, ALDY ALIYANDI, SATRIALDI	536-541
DEVELOPMENT OF JACALIN CONJUGATED NANOSTRUCTURED LIPID CARRIERS FORMULA FOR TRANSCUTANEOUS VACCINE DELIVERY TRI SUCIATI, ALYANI SAMHANA, RACHMAT MAULUDDIN	542-547
PHYTOCHEMICAL PROFILE, IN VITRO ANTIOXIDANT AND HEMOLYTIC ACTIVITIES OF VARIOUS LEAF EXTRACT OF NYMPHAEA NOUCHALI LINN: AN IN VITRO STUDY LAKSHMI G, SMITHA N, AMMU S V, PRIYA C L, BHASKARA RAO K V	548-552
IONIC LIQUID PROMOTED SYNTHESIS OF 2-PHENYLIMIDAZO [1,2-A]PYRIDINE DERIVATIVES AND THEIR ANTIBACTERIAL SCREENING SANGEETA BHARGAVA, ANITA CHOUDHARY	553-557
3D QSAR AND DOCKING STUDIES OF A SERIES OF HAMAMELITANNIN DERIVATIVES AS POTENTIAL PBP4 INHIBITORS RUPANJALI BHATTACHARJYA SHARMA, MRIDUJUNA GOGOI, BANASRI BAISHYA, SURABHI JOHARI	558-562
CYTOTOXICITY AND ANTIOXIDANT ACTIVITY OF A STREPTOMYCES SP. FROM MANGROVE SEDIMENTS OF DAR ES SALAAM, TANZANIA SOSOVELE M. EVA, STEWART BARAKA, HOSEA M.M. KEN	563-566
STUDIES ON PHYTOCHEMICALS, ANTIOXIDANT AND CYTOTOXICITY EFFECT OF HYBANTHUS ENNEASPERMUS REX DAB, B RAGAVAN	567-572
COMPUTER AIDED DRUG DESIGN TECHNOLOGY-LIPOSOMAL DRUG DELIVERY SYSTEM MOHIT CHHABRA, AASTHA SHARMA, KAMAL PESHWANI, S. ANANDA KUMAR	573-577
ASSESSMENT OF DIETARY PRACTICE AMONG OSTEOARTHRITIS PATIENTS P. SRINIVAS, R.K.SWAMY, K. PRAMEELA DEVI, B. SAILAJA	578-581
RP-HPLC METHOD DEVELOPMENT AND VALIDATION FOR THE QUANTITATIVE ESTIMATION OF ACAMPROSATE CALCIUM IN TABLETS LAXMI BHARGHAVI, M. MAHESHWARI, N.KARTHEEK, A. ASHOK KUMAR	582-585
IN-VITRO ANTI-BACTERIAL AND ANTI-FUNGAL ACTIVITY OF SELECT ESSENTIAL OILS SANGEETA SONI, U.N. SONI	586-591
ANTIOXIDANT INDIVIDUAL Γ-ORYZANOL SCREENING IN COLD PRESSED RICE BRAN OIL OF DIFFERENT THAIRICE VARIETIES BY HPLC-DPPH METHOD APIRAK SAKUNPAK, JIRAPORNCHAI SUKSAEREE, PATHAMAPORN PATHOMPAK, TOSSATON CHAROONRATANA, NAMFA SERMKAWEW	592-597
UV SPECTROPHOTOMETRIC METHOD DEVELOPMENT AND VALIDATION FOR THE QUANTITATIVE ESTIMATION OF INDINAVIR SULPHATE IN CAPSULES B. HEMALATHA RATHOD, S.SANDHYA RANI, N.KARTHEEK, A. ASHOK KUMAR	598-601
INVESTIGATION OF ANTI-UROLITHIATIC ACTIVITY OF BRASSICA OLERACEA GONGYLODES AND DESMOSTACHYA BIPINNATA IN EXPERIMENTALLY INDUCED UROLITHIASIS IN ANIMAL MODELS R. NAGA KISHORE, T.MANGILAL, N.ANJANEYULU, G.ABHINAYANI AND N.SRAVYA	602-604
CALCIUM PHOSPHATE NANOPARTICLES A NOVEL NON-VIRAL GENE DELIVERY SYSTEM FOR GENETIC TRANSFORMATION OF TOBACCO MOHAMMAD REZA SALAHI ARDEKANI, M. Z. ABDIN, NAZIMA NASRULLAH, MOHD SAMIM	605-609
CAN MAKJONG (SCAPHIUM MACROPODUM) POWDER FORMED GEL IN EFFERVESCENT BLEND?	610-612

CHAOWALIT MONTON, JIRAPORNCHAI SUKSAEREE, PATHAMAPORN PATHOMPAK

[PROTECTIVE EFFECTS OF A - CRYSTALLIN ON B - AMYLOID \(AB\) INDUCED TOXICITY](#)

614-620

K. GOMATHI GOPINATHAN AND D.GAYATHRI

[A VALIDATED STABILITY INDICATING RP-HPLC METHOD FOR SATRANIDAZOLE, IDENTIFICATION AND CHARACTERIZATION OF A PHOTOLYTIC DEGRADATION PRODUCT OF SATRANIDAZOLE USING LC-APCI-ION TRAP-MS](#)

621-625

SANJAY SAWANT, VIJAYA BARGE

[RNAI MEDIATED SILENCING OF EUKARYOTIC INITIATION FACTOR 4B \(EIF4B\) TO ENHANCE CHEMO-SENSITIVITY OF BREAST CANCER CELLS](#)

626-631

V.SHUNMUGA PRIYA, PRAJAGURU

[EFFECT OF THE GLOBAL VARIATION OF THE GENETIC BIOMARKER URIDINE DIPHOSPHATE GLUCURONOSYL TRANSFERASE](#)

632-637

YOLANDE B. SAAB, TAIMOURLANGAEE, RONY ZEENNY

[COMPUTATIONAL APPROACH FOR IDENTIFYING THERAPEUTIC MICRO RNAS](#)

638-640

A.HARISHCHANDER, D. ALEX ANAND

[BIOLOGICAL VERIFICATION AND QUALITY ASSESSMENT OF A NATURAL HEPATOPROTECTIVE RECIPE](#)

641-647

NEVEIN M. ABDEL-HADY, GAMIL M. ABDALLAH AND NAGI F. IDRIS

Review Article

[HYDROXAMIC ACID BASED HISTONE DEACETYLASE INHIBITORS: PRESENT AND FUTURE PROSPECTIVES AS ANTICANCER AGENT](#)

648-650

DEEPAK K. JAIN, AVINEESH SINGH, VIJAY K. PATEL, PRABODH C. SHARMA, ARUN K. GUPTA, AJAY K. SHARMA, HARISH RAJAK

Corrigendum

[CORRIGENDUM TO "TOXICITY, ANALGESIC AND ANTI-PYRETIC ACTIVITIES OF METHANOLIC EXTRACT FROM HYOSCYAMUS ALBUS' LEAVES ON ALBINOS RATS"](#)

651-655

AFAF BENHOUDA, MOULOUD YAHIA

[CORRIGENDUM TO "FORMULATION, DEVELOPMENT AND IN-VITRO EVALUATION OF MUCOADHESIVE BILAYERED BUCCAL PATCHES OF MONTELUKAST SODIUM"](#)

656

RAJEEV SONI, GALI VIDYA SAGAR, PANKAJ SHARMA

[Open Access Policy](#) || [Contact Us](#) || [Publication Ethics](#)

All Rights Reserved @ Innovare Academic Sciences Pvt. Ltd || Powdered By: CyberDairy | Anchal



Publish Open Access

Contribute your work today.

tandfonline.com

OPEN

Journal of Pharmacy and Pharmaceutical Sciences

75

H Index

- Country** [Canada](#) -
- Subject Area and Category** [Medicine](#)
[Medicine \(miscellaneous\)](#)
[Pharmacology, Toxicology and Pharmaceutics](#)
[Pharmaceutical Science](#)
[Pharmacology](#)
- Publisher** [Canadian Society for Pharmaceutical Sciences](#)
- Publication type** [Journals](#)
- ISSN** [14821826](#)
- Coverage** [1998-2020](#)

Scope The Journal of Pharmacy and Pharmaceutical Sciences (JPPS) is the official journal of the Canadian Society for Pharmaceutical Sciences. JPPS is a broad-spectrum, peer-reviewed, international pharmaceutical journal circulated electronically via the World Wide Web. Subscription to JPPS is free of charge. Articles will appear individually as soon as they are accepted and are ready for circulation.

- [Homepage](#)
- [How to publish in this journal](#)
- [Contact](#)
- [Join the conversation about this journal](#)



L'il Critters, Complete Multivitamin...

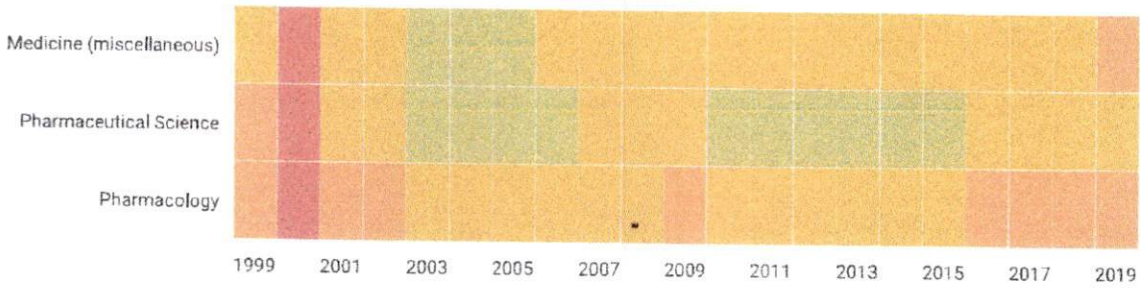
IDR 202k

America's #1 Gummy Vitamin Brand Roarin' Taste Dietary Supplement Delicious Fruit...

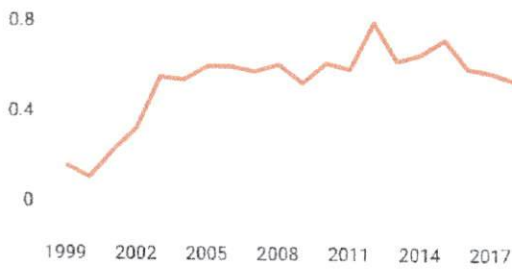
iHerb

Quality Supplements at iHerb®
iHerb

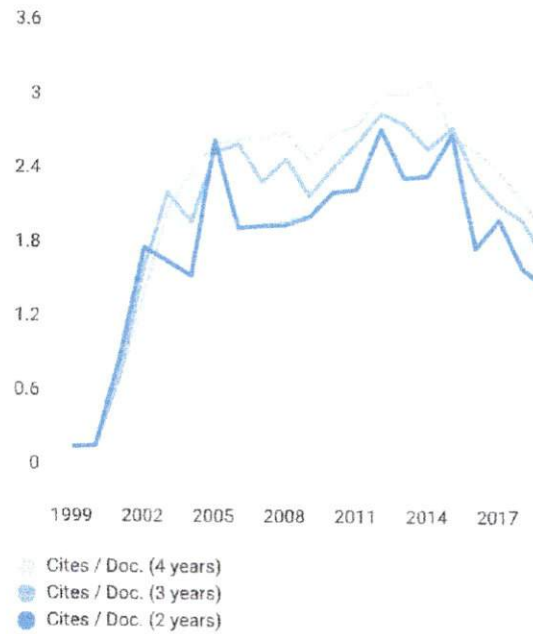
Quartiles



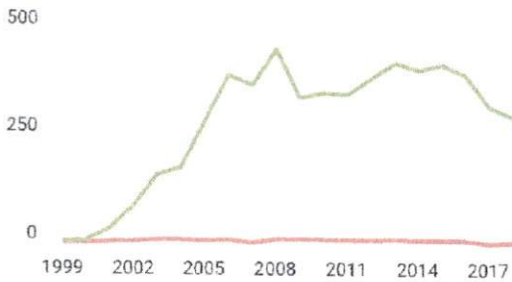
SJR



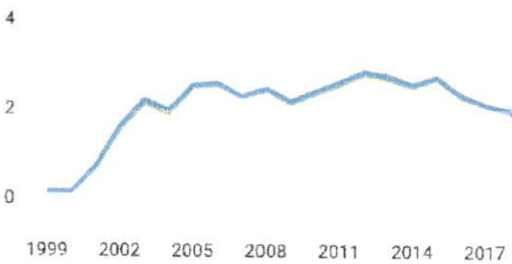
Citations per document



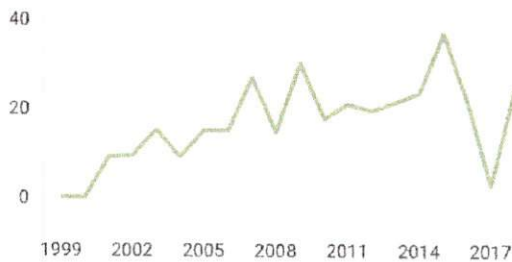
Total Cites Self-Cites



External Cites per Doc Cites per Doc



% International Collaboration



Citable documents Non-citable documents

Cited documents Uncited documents





Journal of Pharmacy and
Pharmaceutical Sciences



← Show this widget in
your own website

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

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



L'il Critters, Complete Multivitamin...

IDR 202k

America's #1 Gummy Vitamin Brand Roarin' Taste Dietary
Supplement Delicious Fruit...

iHerb

Metrics based on Scopus® data as of April 2020

By **Dr Rashmi Sharma** 2 months ago

Excellent.

reply



Melanie Ortiz 1 month ago

SCImago logo

Dear Dr. Rashmi, thanks for your participation! Best Regards, SCImago Team

By **Richardson Brown** 2 years ago

It's an enormous pleasure and honor to organize "15th World Congress On Bioavailability and Bioequivalence" scheduled during July 29-30, 2019 at Bangkok, Thailand. The conference is mainly focused on the theme of "Essential Innovation in the field of Pharmaceutical Science for Public and Medical health". BABE Conference 2019 is designed with prudent keynote sessions, session lectures, and poster presentations, presentations from the young researchers, panel discussions, and the B2B meetings with world-renowned speakers from the stream of clinical and pharmaceutical sciences. It provides the best platform for the researchers to the researchers all over globe to introduce themselves to the world with their unique researches. It's an open forum to discuss new researches and the challenges faced during the BA/BE studies, manufacturing the

FREE-RADICAL SCAVENGING ACTIVITY SCREENING OF SOME INDONESIAN PLANTS

ACHMAD FUAD HAFID^{1,2*}, ISMAIL¹, SAMUEL WARDIYANTO¹, LIDYA TUMEWU², ABDUL RAHMAN¹,
ATY WIDYAWARUY ANTI^{1,2}

¹Department of Pharmacognosy and Phytochemistry, Faculty of Pharmacy, Universitas Airlangga, Jalan Dharmawangsa Dalam, Surabaya 60286, Indonesia. ²Institute of Tropical Disease, Universitas Airlangga, Campus-C Universitas Airlangga Mulyorejo, Surabaya 60115, Indonesia.
Email: achmadfuad@ff.unair.ac.id

Received: 12 Mar 2014 Revised and Accepted: 10 Apr 2014

ABSTRACT

Objective: Indonesia is well known for its biodiversities and very rich of plants species which only a small portion of the species have been investigated in detail. This study aimed to investigate free radical scavenging activity of some Indonesian plants.

Methods: Ethanol extract of leaves and stems of plants were tested for their free radical scavenging activity using 2,2-Diphenyl-1-picrylhydrazyl (DPPH) by TLC-autography and spectrophotometry method.

Results: The TLC-autography result showed that all samples have free-radical scavenging activities. Spectrophotometry analysis results showed that the lowest IC₅₀ value was ethanol extract of *Alectryon serratus* stem with IC₅₀ value of 2.04 ppm, lower than vitamin C with IC₅₀ value of 3.11 ppm. The highest IC₅₀ value was ethanol extract of *Ochrosia akkeringae* leaves with IC₅₀ value of 214.64 ppm.

Conclusion: Ethanol extract of *Alectryon serratus* stem may be potential to be developed as a medicinal drug.

Keywords: Free-radical scavenging activity, Indonesian plants, TLC-autography, Spectrophotometry.

INTRODUCTION

Free radical was molecules which have unpaired electron at the outer orbit, as a consequence, they were tend to be unstable and very reactive [1]. The unpaired electron determined the reactivity degree of free radical. Main class of free radicals generated in living organism was derived from oxygen, such as superoxide, hydroxyl, peroxy (RO^{2•}), alkoxyl (RO•), and hydroperoxyl (HO^{2•}) radicals [1, 2]. They were called as reactive oxygen species (ROS). Another major radicals such as nitric oxide (NO•) and nitrogen dioxide (•NO₂) were free radicals nitrogen and were called as reactive nitrogen species (RNS). Both ROS and RNS were normal products of metabolism processes and could be beneficial or even deleterious for organism. At a low concentration, ROS and RNS defense the body from infectious agents and played roles in a number of cellular signaling systems. The over production of ROS and RNS could damage and decrease the function of cellular lipid, proteins, and DNA in biological process usually called as an oxidative stress or nitrosative stress.

Organisms have developed some mechanisms to protect their bodies from free radicals-induced oxidative or nitrosative stress. They produced antioxidant molecules to protect cells from damage which caused by free radicals [3]. At a low concentration in the body, antioxidants could protect the cells and its content like proteins, lipids, carbohydrates, and DNA significantly [4]. Plants produced some compounds such as polyphenols and flavonoid that tend to have free radical scavenging activity.

Indonesia is well known in rich biodiversities of plant species where only small portion of the species have been investigated in detail. This study aimed was to investigate free radical scavenging activity of some Indonesian plants obtained from Alas Purwo National Park at Banyuwangi, East Java. Plants which have obtained from exploration were *Garuga floribunda* (Burseraceae), *Ochrosia akkeringae* (Apocynaceae), *Tabernaemontana pandacaqui* (Apocynaceae), *Mitrephora polypyrena* (Annonaceae), *Alectryon serratus* (Sapindaceae), and *Lepisanthes rubiginosum* (Sapindaceae). There were a little studies of those species, but there were a lot of publications about another species on the same family, such as Burseraceae [5], Apocynaceae [6,7], Annonaceae [8], and Sapindaceae [9]. Thus, the main goal of this study was to explore the potential in vitro radical scavenging activity of the plants.

MATERIALS AND METHODS

Chemicals and reagents

2,2-Diphenyl-1-picrylhydrazyl (DPPH) (Sigma Aldrich), vitamin C (Merck), ethanol and methanol pro analysis (J.T Baker), TLC silica gel 60 F254 (Merck), Spectrophotometer Shimadzu UV-1800.

Plant materials

Stems and leaves of *Garuga floribunda*, *Alectryon serratus*, *Ochrosia akkeringae*, *Tabernaemontana pandacaqui*, *Mitrephora polypyrena*, and *Lepisanthes rubiginosum* were obtained from Alas Purwo National Park at Banyuwangi, East Java. All samples were authenticated by the authority of Purwodadi Botanical Garden, Pasuruan, East Java.

Extract preparations

Twelve samples obtained from Alas Purwo National Park were powdered, and then 50 g of each powdered sample was extracted using 250 mL of ethanol 80% by ultrasonic assisted extraction, for 3x2-minutes and repeated until reached total ethanol 80% being used was 750 mL. The extracts were evaporated in rotary evaporator and then stored in an oven at 40°C until constant weight.

Preliminary phytochemical screening

The presence of polyphenols was tested with FeCl₃ reagent, flavonoids with H₂SO₄ 10%, and terpenoids with anisaldehyde-H₂SO₄.

DPPH free radical scavenging assay

Qualitative assay

Stock solutions 10,000 ppm of each samples were spotted on silica gel TLC (Thin layer chromatography)-plates by 5x2 µL and the plates were developed in appropriate solvent systems to resolve components of the extracts. The plates were dried at room temperature and were sprayed with 0.02% DPPH in methanol. Bleaching of DPPH by the resolved bands was observed for 30 minutes and 60 minutes and the color changes (yellow on purple background) were noted. The qualitative assay was conducted to

observe the color changes of spots. Pale yellow spot meant that sample has a radical scavenging activity.

Quantitative assay

Solution of DPPH 0.004% in methanol was measured for its absorbance at 497 nm, 517 nm, and 537 nm using spectrophotometer. Afterwards, a diluted concentration series of extract solutions were pipetted 300 µL and were mixed with 2,700 µL DPPH 0.004% solution. After 30 minutes from mixing time, the mixed solutions absorbance were measured and repeated again after 60 minutes. The absorbance was calculated using formula

$$A = A_{517} - \frac{A_{497} + A_{537}}{2}$$

and radical scavenging activity was calculated as % reduction of DPPH's absorbance using formula

$$\% \text{ reduction} = \left\{ 1 - \frac{A_1}{A_0} \right\} \times 100\%$$

Which A0 was the absorbance of DPPH 0.004% solution and A1 was the absorbance of the mixed solutions. All data then were processed by linear regression equation and IC₅₀ value was calculated. Vitamin C was used as a reference. The quantitative assay was carried out to determine radical scavenging activity which expressed by IC₅₀ value.

RESULTS

Preliminary phytochemical screening

Qualitative test of the sample extracts were performed to detect the presence of various phytochemicals including polyphenols, flavonoids, and terpenoids. The result was showed in Table 1.

Phytochemical screening of the plant samples revealed some differences in the phytochemical constituents of the plants tested. All the samples tested were positive for polyphenols and terpenoids while only *Garuga floribunda* stem and *Tabernaemontana pandacaqui* leaves were negative for flavonoids.

Table 1: Preliminary phytochemical screening results of some Indonesian plants

Plant extract	Terpenoid	Flavonoid	Polyphenol
<i>Garuga floribunda</i> stem	+	-	+
<i>Garuga floribunda</i> leaves	+	+	+
<i>Ochrosia akkeringae</i> stem	+	+	+
<i>Ochrosia akkeringae</i> leaves	+	+	+
<i>Tabernaemontana pandacaqui</i> stem	+	-	+
<i>Tabernaemontana pandacaqui</i> leaves	+	+	+
<i>Mitrephora polypyrena</i> stem	+	+	+
<i>Mitrephora polypyrena</i> leaves	+	+	+
<i>Lepisanthes rubiginosum</i> stem	+	+	+
<i>Lepisanthes rubiginosum</i> leaves	+	+	+
<i>Alectryon serratus</i> stem	+	+	+
<i>Alectryon serratus</i> leaves	+	+	+

DPPH free radical scavenging assay

The DPPH test showed the ability of the samples as a free radical scavenger. DPPH was a free radical and gave a strong absorption band at 517 nm in the visible region of the electromagnetic radiation. It has a deep violet color. This absorption diminished as the electron was paired off resulting in decolorization with respect to the number of electrons taken up and the color changes to a pale yellow. The TLC-autography result showed that all samples have free-radical scavenging activity in various strength determined by intensity of yellow color shown at the TLC plate as showed on Figure 1.

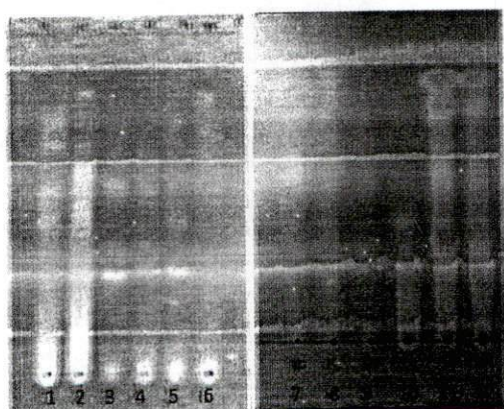
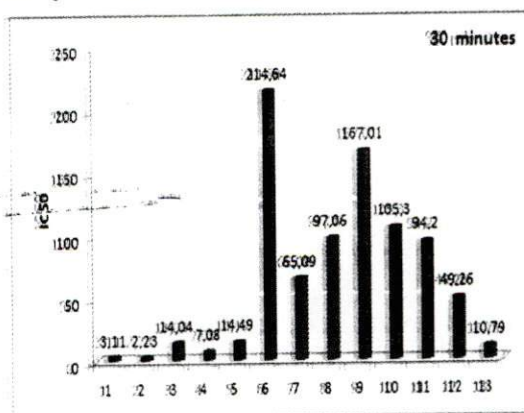


Fig. 1: TLC-autography result after 30 minutes sprayed by DPPH 0,2%. 1,2: *Garuga floribunda* stem, leaves; 3,4: *Ochrosia akkeringae* stem, leaves; 5,6: *Tabernaemontana pandacaqui* stem, leaves; 7,8: *Mitrephora polypyrena* leaves, stem; 9,10: *Lepisanthes rubiginosum* leaves, stem; 11,12: *Alectryon serratus* leaves, stem.

Furthermore, the samples were measured their IC₅₀ value by spectrophotometry method. IC₅₀ value was the concentration of substrate that caused 50% loss of the DPPH color/activity¹⁰. As a reference, vitamin C was measured for its IC₅₀ value as well.

The result from spectrophotometry measurement showed that IC₅₀ value of vitamin C were 3.11 ppm at 30 minutes and 3.13 ppm at 60 minutes. The lowest IC₅₀ value of the samples was ethanol extract of *Alectryon serratus* leaves with IC₅₀ value of 2.23 ppm at 30 minutes and 1.96 ppm at 60 minutes, which was lower than vitamin C. The highest IC₅₀ value was ethanol extract of *Ochrosia akkeringae* leaves with IC₅₀ value of 214.64 ppm at 30 minutes and 189.25 ppm at 60 minutes. The complete result was showed at Figure 2.

The lower IC₅₀ value indicated the higher free radical scavenging activity of the sample, plant with low IC₅₀ value may be potential to be developed as a medicinal drug.



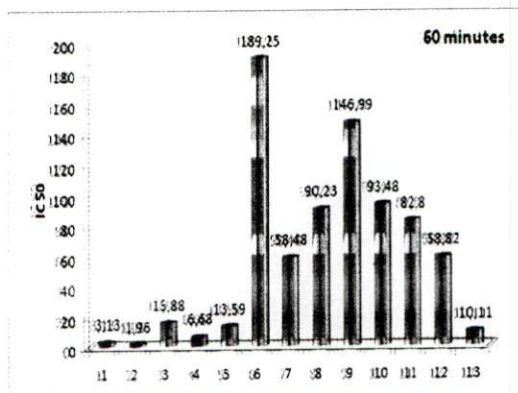


Fig. 2: IC₅₀ of all samples at 30 minutes (left) and at 60 minutes (right). 1:Vitamin C; 2:*Alectryon serratus* leaves; 3:*Alectryon serratus* stem; 4:*Garuga floribunda* leaves; 5:*Garuga floribunda* stem; 6:*Ochrosia akkeringae* leaves; 7:*Ochrosia akkeringae* stem; 8:*Tabernaemontana pandacaqui* leaves; 9:*Tabernaemontana pandacaqui* stem; 10:*Mitrephora polypyrena* leaves; 11:*Mitrephora polypyrena* stem; 12:*Lepisanthes rubiginosum* leaves; 13:*Lepisanthes rubiginosum* stem.

DISCUSSION

Organisms have developed some mechanisms to protect their bodies from free radicals-induced oxidative or nitrosative stress. Human produced endogenous antioxidants such as *superoxide dismutase* (SOD), *glutathione peroxidase* (GPx), *catalase* (CAT), and *glutathione* (GSH) [2]. The imbalance between those radicals and antioxidants defense system may lead to the damage of macromolecules such as DNA, carbohydrates, and protein that is suspected playing roles in pathological processes of various diseases.

Plants have been the basis of traditional medicines in Indonesia and throughout the world for thousands years and continued to provide new remedies to human. Plants contain wide range of chemicals constituents such as vitamins (C, E, carotenoids, etc.), flavonoids (flavones, isoflavones, flavonones, anthocyanins and catechins), polyphenols (ellagic acid, gallic acid and tannins) which exhibit potent antioxidant activities [4], and also some triterpenoids possess antioxidant activity [10]. Thus, plants were potential sources of antioxidant.

Phytochemical screening revealed some differences in polyphenols, flavonoids, and terpenoids constituents of the samples. The differences in phytochemical constituents lead to different radical scavenging activity that was proven by TLC-autography test results. Comparison between TLC plates from phytochemical screening with TLC-autography plates showed that polyphenol and flavonoid compounds were attributed for major radical scavenging activity concluded from the resemblance of spot pattern between those compounds with major bleaching spot pattern from TLC-autography plate. All samples then tested by spectrophotometric method using DPPH to measure its IC₅₀ value. The decreased in absorbance of DPPH radical was caused by an antioxidant molecules, reaction between antioxidant and DPPH results in the scavenging of DPPH by hydrogen donation that reducing absorbance [11]. From this study, the scavenging activity of leaves and stem were found as concentration dependent and the lowest IC₅₀ value was ethanol extract of *Alectryon serratus* leaves with IC₅₀ value of 1.96 ppm which result was lower than vitamin C.

There was a growing interest in the investigation of plants as a source of natural antioxidant compounds [12] since they contain a wide range of secondary metabolite which have structural diversity [13]. Ethanol extract of *Alectryon serratus* leaves and stem; *Garuga floribunda* leaves and stem; and *Lepisanthes rubiginosum* stem that exhibited low IC₅₀ value may be potential to be developed as a medicinal drug. These plants would give benefits for human health by protecting body from ill induced by free radicals and preventing free radical induced diseases such as cancer and atherosclerosis. Further research will be conducted to obtain the substance responsible for antioxidant activity of extracts.

ACKNOWLEDGEMENT

The authors acknowledge Universitas Airlangga, Japan International Cooperation Agency (JICA), and Science and Technology Research Partnership for Sustainable Development (SATREPS) in supporting this research.

REFERENCES

- Fang Y-Z, Yang S, Wu G. Free radicals, antioxidants, and nutrition. Nutrition (Burbank, Los Angeles County, Calif.) 2002;18(10):872-9.
- Valko M, Leibfritz D, Moncol J, Cronin MTD, Mazur M, Telser J. Free radicals and antioxidants in normal physiological functions and human disease. The international journal of biochemistry & cell biology 2007;39(1):44-84
- Ayoola GA, Folawewo AD, Adesegun SA, Abioro OO, Adepoju-Bello AA, Coker HAB. Phytochemical and antioxidant screening of some plants of Apocynaceae from South West Nigeria. African Journal of Plant Science Vol 2008;2(9):124-8.
- Gupta AK, Abramovits W, Gover MD. Clobex (clobetasol propionate) Spray, 0.05%. Skinned 2006;5(4):184-5.
- Thupurani MK, Reddy PN, Thirupathiah A, Charya MAS, Shiva D, J. In vitro Determination of anti-oxidant activities of *Garuga pinnata* Roxb. Int Arom Plants Vol 2 No 2012;4:566-72.
- Nasab MF, Hadi AHA, Najmuldeen IA, Awang K, Sohrab AD, Ebrahimi RF. Antioxidant and antimicrobial activities of ferulic acid esters from *Ocrosia oppositifolia*. Malaysian Journal of Science Vol 30 No 2011;2:154-60.
- Thombre R, Jagtap R, Patil N, Negundo L, J. Evaluation of phytochemical constituents, antibacterial, antioxidant and cytotoxic activity of *Vitex* and *Tabernaemontana divaricata* L. Int Bio Sci 2013;4(1):389-96.
- Almeida AP, Cunha LM, Bello ACPP, da Cunha AP, Domingues LN, Leite RC, et al. A novel Rickettsia infecting *Amblyomma dubitatum* ticks in Brazil. Ticks and tick-borne diseases 2011;2(4):209-12.
- Dias SA, Cardoso FP, Santin SMO, Costa WF, Vidotti GJ, de Souza MC. da Free radical scavenging activity and chemical constituents of *Urvillea ulmaceae*. Pharmaceutical Biology 2009;47(8):717-20.
- Molyneux P, J. The use of the stable free radical diphenylpicrylhydrazyl (DPPH) for estimating antioxidant activity. Songklanakarin Technol 2004;26(2):211-9.
- Rai S, Wahile A, Mukherjee K, Saha BP, Mukherjee PK. Antioxidant activity of *Nelumbo nucifera* (sacred lotus) seeds. Journal of ethnopharmacology 2006;104(3):322-7.
- Krishnaiah D, Sarbatly R, Nithyanandam R. A review of the antioxidant potential of medicinal plant species. Food Bioprod Process vol 2011;89:217-33.
- Joseph B, Priya RM. Bioactive compound from Endophytes and their potential in pharmaceutical effect: a review. American Journal of Biochemistry and Molecular Biology 2011;1(3):291-309.