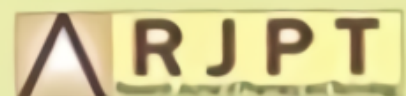


ISSN- 0974-3618 (Print)
ISSN- 0974-360X (Online)

Research Journal of Pharmacy and Technology

RJPT

An International Peer-reviewed
Journal of Pharmaceutical Sciences



EDITOR IN CHIEF



DR. MRS. MONIKA S. DAHARWAL

[Editor In Chief](#)

A & V Publications, RJPT House, Lokmanya GrihNirman Society, Rohanipuram, In-front of Sector- 1, Pt. Deendayal Upadhyay Nagar, Raipur 492 010. (CG) India

Email: editor.rjpt@gmail.com

[Home Page](#)

ASSOCIATE EDITOR



MARWAN MAHMOOD SALEH

[Associate Editor](#)

Anbar-Ramadi- Habbaniya- 4-4-17

Email: bio.marwan92@gmail.com

[Home Page](#)



DHANANJAY BABANRAO DESHMUKH

[Associate Editor](#)

Ashvin college of pharmacy manchi hill ashvi Bk sangamner Ahmednagar

Email: dhananjaydeshmukh777@gmail.com

[Home Page](#)



DR.RER.NAT ARLI ADITYA PARIKES

[Associate Editor](#)

Department of Bioinformatics School of Life Sciences Indonesia International Institute for Life Sciences Jl. Pulomas Barat Kav.88 Jakarta 13210

Email: arli.parikesit@i3l.ac.id

[Home Page](#)



DR G KUMARASWAMY

[Associate Editor](#)

Dr.Kumara Swamy. Gandla Prof.& HeadDept.of Pharmaceutical AnalysisCare College of Pharmacy, Warangal, Telangana.Mobile: +91-9000973789

Email: kumaraswamy.gandla@gmail.com

[Home Page](#)



HARDIK PATHAK

[Associate Editor](#)

222 pashupatinath nagar, jaipur

Email: hardikaeshu@gmail.com

[Home Page](#)



MARIIA SHANAIDA

[Associate Editor](#)

46001, Ternopil, Voli Str., 1. Ukraine

Email: shanyda-mi@ukr.net

[Home Page](#)



DR. G. MANIKANDAN

[Associate Editor](#)

Dr. G.Manikandan Assistant Professor Department of Botany Sri Kaliswari College (Autonomous)
Sivakasi - 626130 Tamil Nadu India

Email: rgmani.19@gmail.com

[Home Page](#)



DR.S.MOHANASUNDARAM

[Associate Editor](#)

Department of Biochemistry, Sri Sankara Arts and Science College (Autonomous), Kanchipuram -
631561, Tamilnadu, India

Email: sbmohan2007@gmail.com

[Home Page](#)



DR SHAEESTA K. BHAVIKATTI

[Associate Editor](#)

College of Dentistry, King Khalid University, Abha, Saudi Arabia

Email: drshaeesta@gmail.com

[Home Page](#)



DR KARTEEK ESWARA

[Associate Editor](#)

T2,staff quarters, ksr Institutions, ksr kalvi nagar, Tiruchengode-637215, Tamilnadu

Email: karteekeswara@gmail.com

[Home Page](#)

DR. CHUKWUEBUKA EMMANUEL UMEYO

[Associate Editor](#)



Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmaceutical Sciences, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria
Email: ec.umeyor@unizik.edu.ng
[Home Page](#)



DR. PRANAV KUMAR PRABHAKAR
[Associate Editor](#)
Department of Transdisciplinary Research, Division of Research & Development, Lovely Professional University, Phagwara, Punjab, India-144402
Email: prabhakar.iitm@gmail.com
[Home Page](#)



EBAA ADNAN AZOOZ
[Associate Editor](#)
Iraq, Najaf
Email: ebaaadnan.ed12p@uokufa.edu.iq
[Home Page](#)



PROF. VIJAY D. MENDHULKAR
[Associate Editor](#)
Prof. and Head, Department of Botany The Institute of Science 15- Madame Cama Road Fort, Mumbai
Email: drmendhulkar@gmail.com
[Home Page](#)



DR. SUBRAT KUMAR PATTANAYAK
[Associate Editor](#)
Department of Chemistry NIT Raipur -492010, India
Email: skpiitbbs@gmail.com
[Home Page](#)



DR. UPENDRA PRASAD TRIPATHY
[Associate Editor](#)
JAYKAYPUR[PAPRI], RAYAGADA, ODISHA
Email: uptripathy@gmail.com
[Home Page](#)



SONAM BHATIA
[Associate Editor](#)
Dept. of Pharmaceutical Sciences, Faculty of Health Science, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, India
Email: sonamniper.bhatia@gmail.com

[Home Page](#)



DR. GURJEET KAUR

[Associate Editor](#)

Amity Institute of Biotechnology Amity University Uttar Pradesh Lucknow India

Email: gkaur@lko.amity.edu

[Home Page](#)



HUSSEIN O.M. AL-DAHMOshi

[Associate Editor](#)

Iraq, Babylon Province Hilla City

Email: dr.dahmoshi83@gmail.com

[Home Page](#)



DR. BISWAJIT BASU

[Associate Editor](#)

Dr. Biswajit Basu. Associate Professor. Department of Pharmaceutics. Bengal School of Technology, Sugandha, Delhi Road, Hooghly – 712 102, West Bengal India.

Email: bbasu.pharma@gmail.com

[Home Page](#)



BIMESH KUMAR

[Associate Editor](#)

BLOCK-4B, ROOM NO 203, SCHOOL OF PHARMACEUTICAL SCIENCES, LOVELY PROFESSIONAL UNIVERSITY, PHAGWARA, PUNJAB, 144411

Email: bimlesh1pharm@gmail.com

[Home Page](#)



DR. BELLAMKONDA RAMESH

[Associate Editor](#)

Department of Food Technology, Vikrama Simhapuri University, Nellore, Andhra Pradesh, India-524320

Email: rammygp@gmail.com

[Home Page](#)



K. MAHALINGAN

[Associate Editor](#)

RR College of Pharmacy, RR Nagar, Chickabanawara, Bangalore- 560090

Email: kmahalingan@gmail.com

[Home Page](#)



DR. RUPESH K. GAUTAM

[Associate Editor](#)

MM School of Pharmacy, MM University, Ambala-Chandigarh Highway, Sadopur-Ambala (India)
-134007

Email: drrupeshgautam@gmail.com

[Home Page](#)



DR LINU MOHAN P

[Associate Editor](#)

Professor Department of Pharmacy Practice Al Shifa College of Pharmacy Perinthalmanna-
Kerala- India

Email: linumohanp@alshifacollegeofpharmacy.ac.in

[Home Page](#)



SHANKAR BALU KALBHARE

[Associate Editor](#)

YSPM'S Yashoda Technical Campus, Satara 415003

Email: kirankal786@gmail.com

[Home Page](#)



R.SUNDARALINGAM

[Associate Editor](#)

Assistant Professor, Department of Microbiology, Madras Christian College (Autonomous),
Tambaram, Chennai - 600059. Tamilnadu

Email: sundaralingam@mcc.edu.in

[Home Page](#)



DR ANUPAM KR SACHAN

[Associate Editor](#)

Dayanand Dinanath College, Institute of Pharmacy, Kanpur Nagar, Uttar Pradesh-208027

Email: anupamkrsachan@gmail.com

[Home Page](#)



MANIKANDAN K

[Associate Editor](#)

SRM College of Pharmacy SRM Institute of Science and Technology Kattankulathur,
Kancheepuram

Email: gurumani12@gmail.com

[Home Page](#)



DR. PAVAN KUMAR

[Associate Editor](#)

Koneru Lakshmaiah Education Foundation KLEF

Email: pavankmaths@gmail.com

[Home Page](#)



ASHEESH SINGH

[Associate Editor](#)

M-303, Swastik city near Pooja park, Lambha turning Narol-Ahmedabad-382405

Email: asheesh_parihar@yahoo.com

[Home Page](#)



SWARNIMA PANDEY

[Associate Editor](#)

Goel Institute of Pharmacy & Sciences ,Faizabad road lucknow 226028

Email: yesgoldi@gmail.com

[Home Page](#)



DR. PARUL JOHRI

[Associate Editor](#)

C-1/167 indra nagar kanpur

Email: pjohri@lko.amity.edu

[Home Page](#)



MORTEZA SAKI

[Associate Editor](#)

Department of Microbiology, Faculty of Medicine Ahvaz Jundishapur University of Medical Sciences Ahvaz

Email: mortezasaki1981@gmail.com

[Home Page](#)



DUMPALA LAKSHMIPRASUNA RAJESH

[Associate Editor](#)

Sumandeep Pharmacy college AT & PO: PIPARIA,WAGHODIA ROAD, TA: WAGHODIA, VADODARA- 391760

Email: mlakshmiprasuna2015@gmail.com

[Home Page](#)

DR. S. BALASUBRAMANIYAN

[Associate Editor](#)

National Centre for Coastal Research Chennai.



Email: sakthivelbala.s@gmail.com
[Home Page](#)



PROF. DR. NAGHAM MAHMOOD ALJAM
[Associate Editor](#)
Professor, Ph.D, Organic Chemistry , Iraq dr.nagham_mj@yahoo.com
Email: dr.nagham_mj@yahoo.com
[Home Page](#)



ARIF NUR MUHAMMAD ANSORI
[Associate Editor](#)
Universitas Airlangga, Surabaya, Indonesia.
Email: arif.nma-17@fkh.unair.ac.id
[Home Page](#)



DR.K.B.BHASKAR
[Associate Editor](#)
33B, kannadhasan street, new balaji nagar, selaiyur , chennai.
Email: jaibhaskar15@gmail.com
[Home Page](#)



DIMPLE NAGPAL
[Associate Editor](#)
Chitkara University,Punjab
Email: dimplenagpal009@gmail.com
[Home Page](#)



DR VINAYAKUMAR KADIBAGIL
[Associate Editor](#)
BELUR ROAD, 2ND CROSS ABHI Building
Email: DRVINAYKADIBAGIL@GMAIL.COM
[Home Page](#)



DR. ATUL KABRA
[Associate Editor](#)
University Institute of Pharma Sciences Chandigarh University Mohali, Punjab
Email: atul.kbr@gmail.com
[Home Page](#)



MOHD IBRAHIM ALARAJ
[Associate Editor](#)
Airport St. Amman, Jordan
Email: ibrahim_naseem@yahoo.com
[Home Page](#)



RAVINANDAN A P
[Associate Editor](#)
Mr. Ravinandan A P, M. Pharm, MBA, FSASS, (Ph.D.) Assistant Professor, Clinical Pharmacist and Research Scholar Department of Pharmacy Practice Sree Siddaganga College of Pharmacy In Collaboration with Siddaganga Hospital and Research Centre BH Road, Tumkur, Karnataka, India
Email: ravinandanap@gmail.com
[Home Page](#)



DR. PUTTA RAJESH KUMAR
[Associate Editor](#)
Dr. Putta Rajesh Kumar, C/o: Amdapur X Road, Yenkapally, Moinabad, Ranga Reddy, Hyderabad, Telangana 500075 INDIA Mobile: 0-949-072-1376
Email: prkbpc@gmail.com
[Home Page](#)



DR. SRIKANTH JEYABALAN
[Associate Editor](#)
Department of Pharmacology Sri Ramachandra Faculty of Pharmacy Sri Ramachandra Institute of Higher Education & Research (DU) Porur, Chennai , Tamil Nadu - 600 116
Email: srikanth.j@sriramachandra.edu.in
[Home Page](#)



PROF.B.RAMYA KUBER
[Associate Editor](#)
Prof.B.Ramya Kuber, Professor of Pharmacognosy Institute of Pharmaceutical Technology, Sri Padmavati Mahila Visvavidyalayam(Women's University), Tirupati-517502, Andhra Pradesh,India.
Email: rkuberpharma@yahoo.com
[Home Page](#)



DR GOVINDH BODDETI
[Associate Editor](#)
Door Number: 1-1-33/A, New Venkojipalem
Email: govindhbd@gmail.com
[Home Page](#)



DR DURGESH RANJAN KAR

[Associate Editor](#)

BENGAL SCHOOL OF TECHNOLOGY A COLLEGE OF PHARMACY SUGHANDHA
CHUCHURA DIST- HOOGHLY WEST BENGAL INDIA

Email: durgesh176@gmail.com

[Home Page](#)



MORTHA LAKSHMI PRASANNA

[Associate Editor](#)

VJ'S COLLEGE OF PHARMACY Diwancheruvu Rajahmundry, andhra pradesh Pin 533296

Email: luckympharma09@gmail.com

[Home Page](#)



DR. GARIMA MISHRA

[Associate Editor](#)

Department of Pharmacy, College of Health Sciences, Debre Tabor University, Ethiopia

Email: gp_nmr2002@yahoo.co.in

[Home Page](#)



DR. PRADEEP SINGH

[Associate Editor](#)

Department of Pharmacy, College of Health Sciences, Debre Tabor University, Ethiopia

Email: pradeep_2682@yahoo.co.in

[Home Page](#)



DR. DAVID PAUL

[Associate Editor](#)

St.James College of Pharmaceutical Sciences St.James Medical Academy River Bank,
Chalaky Kerala, India-680307

Email: davidpaulred@gmail.com

[Home Page](#)



DR.S.SASIKALA

[Associate Editor](#)

Head and Associate professor Department of Computer Science with Cognitive Systems
Hindusthan College of Arts and Science, Coimbatore – 641028, Tamilnadu, India.

Email: iamsasikalamohit@gmail.com

[Home Page](#)

DR. A.K. JHA

[Associate Editor](#)



Principal, Shri Shakaracharya College of Pharma. Sciences, Bhilai CG India
Email: jhaak@rediffmail.com
[Home Page](#)



DR. NAGHAM MAHMOOD ALJAMALI
[Associate Editor](#)
college Education , department , IRAQ.
Email: dr.nagham_mj@yahoo.com
[Home Page](#)



DR. R. B. KAKADE
[Associate Editor](#)
Professor, Uni. Dept. of Pharmaceutical Sci., RTM Nagpur University, Nagpur India
Email: drkakde@yahoo.com
[Home Page](#)



WISSAM ZAM
[Associate Editor](#)
Al-Andalus University of Medical Sciences/Faculty of Pharmacy-Tarous, Syria
Email: w.zam@au.edu.sy
[Home Page](#)



DR. VIBHA YADAV
[Associate Editor](#)
Covington, LA, USA
Email: editor.rjpt@gmail.com
[Home Page](#)



DR. S. ASHUTOSH KUMAR
[Associate Editor](#)
Department of Pharmacy, Tripura University (A Central University) Suryamaninagar, West Tripura,
Tripura- 799022.
Email: ashu.mpharm2007@gmail.com
[Home Page](#)



DR. U.S. MAHADEVA RAO
[Associate Editor](#)
Kuala Terengganu, Malaysia
Email: raousm@gmail.com
[Home Page](#)



CHANDRASEKARAN V M

[Associate Editor](#)

124 Technology Tower VIT University Vellore 632014 (TN)

Email: vmcsn@yahoo.com

[Home Page](#)



NAEEM HASAN KHAN

[Associate Editor](#)

Faculty of Pharmacy, AIMST University, 08100 Bedong, Kedah D.A., Malaysia.

Email: naeemhshirazi@hotmail.com

[Home Page](#)



DR. DEEPANSH SHARMA

[Associate Editor](#)

Block 28, Room No. 202 Department of Biosciences, Lovely Professional University

Email: deepanshsharma@gmail.com

[Home Page](#)



DR. S. SARAF

[Associate Editor](#)

Professor, University Institute of Pharmacy , PT. Ravishankar Shukla University, Raipur-492010

CG India Vice- President, Pharmacy Council of India, New Delhi

Email: shailendrasarf@rediffmail.com

[Home Page](#)



DR. DEEPENDRA SINGH

[Associate Editor](#)

University Institute of Pharmacy Pt. Ravishankar Shukla University Raipur(C.G.)

Email: deependraiop@gmail.com

[Home Page](#)



DR S RAJESHKUMAR

[Associate Editor](#)

Nanotherapy Lab School of Biosciences and Technology, VIT, Vellore

Email: ssrajeshkumar@hotmail.com

[Home Page](#)

VASUNDHRA KASHYAP PHD, MBA, MS



Associate Editor
66 Lowden Avenue, Somerville, MA 02144 USA
Email: vk76@cornell.edu
[Home Page](#)



ROMAN LYSIUK
Associate Editor
Department of Pharmacognosy and Botany, Danylo Halytsky Lviv National Medical University,
Pekarska,69., Lviv, Ukraine, 79010
Email: pharmacognosy.org.ua@ukr.net
[Home Page](#)



BEHZAD FOROUTAN
Associate Editor
Department of Pharmacology, School of Medicine, Shahrood University of Medical Sciences,
Shahrood, Iran
Email: behzad_foroutan@hotmail.com
[Home Page](#)

ACADAMIC EDITOR



DR. BHARTI AHIRWAR
Associate Professor, SLT Institute of Pharm. Sciences, Guru Ghasidas University, Bilaspur CG
India
Email: ah_bharti@yahoo.com
[Home Page](#)



SUDHISH A. RAI
RJPT House, Lokmanya GrihNirman Society, Rohanipuram, In-front of Sector- 1, Pt. Deendayal
Upadhyay Nagar, Raipur 492 010. (CG) India
Email: sudhishrai7337@gmail.com
[Home Page](#)



DR. ASHOK A. HAJARE
Professor and Head, Department of Pharm. Tech., Bharati Vidyapeeth College of Pharmacy,
Kolhapur (M. S.), India Pin - 416013
Email: ashok.hajare@bharativedyapeeth.edu
[Home Page](#)



SANYAM GANDHI

International Regulatory Strategy Lead Takeda Pharmaceutical Company Ltd., 1 Kingdon St., Paddinton, London, W2 6BD England
Email: askforsanyam@gmail.com
[Home Page](#)



DR. AJAY KUMAR MEENA

Captain Srinivasa Murthy Regional Ayurveda Drug Development Institute, Arumbakkam, Chennai – 600 106
Email: ajaysheera@gmail.com
[Home Page](#)

EDITORS



DR AVINASH B DAREKAR

KVNNSPS, Institute of Pharmaceutical Education and Research, Canada Corner, Nashik, Maharashtra-422002.
Email: avibdarekar@gmail.com
[Home Page](#)



PRAVEEN KUMAR SHARMA

Department of Chemistry, Lovely Professional University, Phagwara, Punjab, India-144411
Email: pk_pandit1982@yahoo.com
[Home Page](#)



DR SUDIP KUMAR MANDAL

Dr. B. C. Roy College of Pharmacy & Allied Health Sciences, Durgapur, West Bengal, India
Email: gotosudip79@gmail.com
[Home Page](#)



DR K MANIKANDAN

Dr.K.Manikandan, M.Pharm., Ph.D., Associate Professor, SRM College of Pharmacy, SRM University, Kattankulathur, Kancheepuram - 603203 Mobile Number - 0 9444708710
Email: manikank2@srmist.edu.in
[Home Page](#)



DR SHAIK HARUN RASHEED

professor & Head Srikrupa Institute of Pharmaceutical Sciences Velikatta, siddipet -502277
Telangana.

Email: shaikharunrasheed@gmail.com

[Home Page](#)



DR. ASHISH KUMAR

Professor and HOD, Department of Chemistry, Lovely Professional University, Jalandhar road
Phagwara

Email: drashishchemlpu@gmail.com

[Home Page](#)



DR. SHAKTA MANI SATYAM

Department of Pharmacology, Melaka Manipal Medical College (Manipal Campus), Manipal
Academy of Higher Education, Manipal- 576104, District- Udupi, State- Karnataka (India)

Email: smsatyam21@gmail.com

[Home Page](#)



ABDULRAHMAN R. MAHMOOD

*Department of Chemistry, College of Education for Pure Sciences/(Ibn-Al-Haitham), University of
Baghdad, Baghdad, Iraq.

Email: abdooljumaily@gmail.com

[Home Page](#)



DR. SUSHIL KUMAR MIDDHA

Maharani Lakshmi Ammanni College For Women, 18th Cross, Malleswaram, Bangalore-12

Email: drsushilmiddha@gmail.com

[Home Page](#)



MUNIM R. ALI

Al-Mustansiriyah University Biology depart./college of Science Iraq/Baghdad

Email: mnumbio77@yahoo.com

[Home Page](#)



DR. GAURAV TIWARI

G-23, Department of Pharmacy, PSIT, NH-2, Kalpi Road, Bhaunti Kanpur 209305

Email: dr.gauravtiwari@psit.in

[Home Page](#)



DR.ZEYAD KADHIM OLEIWI
najaf-iraq
Email: zeyadkadhim@alkafeel.edu.iq
[Home Page](#)



ASSIST. PROF. DR. AMAL TALIB A
Dept. Clinical Laboratory Sciences/ Faculty of Pharmacy/ University of Babylon, Iraq.
Email: amal.atiyah@yahoo.com
[Home Page](#)



YAHIA MOHAMMAD MOUALLA
Alsham private university, Latakia
Email: Yahiamoualla@hotmail.com
[Home Page](#)



MOHANAD MOUSA KAREEM
Babylon University
Email: mohanad_1972@yahoo.com
[Home Page](#)



ADAWIYA FADHIL ABBAS ALZUBAIDI
Iraq / Diyala / Baqubah Diyala university / education college / pure science
Email: adwa_a2000@YAHOO.COM
[Home Page](#)



MOUSHIRA ZAKI
El Bhouth ST.
Email: moushiraz@yahoo.com
[Home Page](#)



DR. AMIT KUMAR CHATURVEDI
Department Of Chemistry, J.S.University , Shikohabad (U.P.)
Email: achaturvedi794@gmail.com
[Home Page](#)



DR. MANOJ KUMAR JENA

Department of Biotechnology, School of Bioengineering and Biosciences, Lovely Professional University, Phagwara-144411, Punjab, India

Email: manoj.20283@lpu.co.in

[Home Page](#)



AVINASH BABURAO THALKARI

Vasant Pharmacy College Kaij Affiliated by MSBTE Mumbai

Email: avinashthalkari@rediffmail.com

[Home Page](#)



RAJESH L. DUMPALA

Alembic Pharma Campus, Alembic Rd, Subhanpura, Vadodara, Gujarat 390003

Email: rdumpala64@gmail.com

[Home Page](#)



ABDULRAHMAN R. MAHMOOD

*Department of Chemistry, College of Education for Pure Sciences/(Ibn-Al-Haitham), University of Baghdad, Baghdad, Iraq.

Email: abdulrahman.r.m@ihcoedu.uobaghdad.edu.iq

[Home Page](#)



DR. T.C. VENKATESWARULU

Department of Bio-Technology, Vignan's Foundation for Science, Technology & Research, Vadlamudi-522213, Andhra Pradesh

Email: venki_biotech327@yahoo.com

[Home Page](#)



DR PRASHANT L. PINGALE

Associate Professor of Pharmaceutics, GES's Sir Dr. M. S. Gosavi College of Pharmaceutical Education and Research, Nashik-422005, Maharashtra, India

Email: prashantpingale@gmail.com

[Home Page](#)



DR GURVINDER SINGH

School of Pharmaceutical Sciences, Lovely Professional University, Phagwara, Punjab

Email: guri_ph@yahoo.co.in

[Home Page](#)



DR.SUSHANT KUMAR

UTTAR PRADESH UNIVERSITY OF MEDICAL SCIENCES, SAIFAI, ETWAH, UTTAR PRADESH

Email: K.SUSHANT25@GMAIL.COM

[Home Page](#)



MR. PARESH ASHOK PATIL

Jay ambe Nivas,Gujar galli, Shahada Dist-Nandurbar

Email: rcp.pareshpatil@gmail.com

[Home Page](#)



VAMSIKRISHAN BIRUPANENI

4401 manchester avenue, Apt#53,CA,95207.

Email: vamsikrishan99@gmail.com

[Home Page](#)



DR. SUNIL KUMAR

122 Ground Floor Research Block A Post Graduate Institute of Medical education and Research

Email: drsunikumarjaswal@gmail.com

[Home Page](#)



SANDEEP PODDAR

Lincoln University College, Wisma Lincoln, No. 12-18, Off Jalan Perbandaran, SS6/12 Kelana Jaya, Selangor D. E. , Malaysia

Email: sandeepoddar@lincoln.edu.my

[Home Page](#)



DR ZAKIR HUSSAIN

Dr Zakir hussain S/o MD.UNUS Rtd Express mail guard SCRLY Near mohammadia masjid, Satyanarayana pet GUNTAKAL-515801 ANANTAPUR DIST ANDHRA PRADESH-INDIA

Email: zakirhussains765@gmail.com

[Home Page](#)



BASIL A. ABBAS

University of Basrah, Basrah, Iraq

Email: basil.abbas@uobasrah.edu.iq

[Home Page](#)



DR V. PALANISINGH

Puduvadi, Ulagampatti post Sivagangai Dist, Tamil Nadu PIN 630410

Email: vpalanisingh@gmail.com

[Home Page](#)



NASIR MUWFAQ YOUNIS

University of Mosul _College of Nursing

Email: nasir.mufaq@uomosul.edu.iq

[Home Page](#)



SANDIP SEN

SRIKRUPPA INSITUTE OF PHARMACEUTICAL SCIENCES, VELIKATTA, KONDAPKKA,
SIDDIPET-502277

Email: sandipen2010@gmail.com

[Home Page](#)



DR. BISWA MOHAN SAHOO

Roland Institute of Pharmaceutical Sciences (Biju Patnaik University of Technology Nodal Centre
of Research) Berhampur-760010, Odisha, India

Email: drbiswamohansahoo@gmail.com

[Home Page](#)



DR.MATADEEN BHARTI

Department of Fluorosis Chief Medical and Health Office Dhar District Dhar MP India pin code
454001

Email: drmdbharti@gmail.com

[Home Page](#)



DR PRASENJIT MONDAL

Vaageswari institute of Pharmaceutical Sciences, Ramakrishna colony, Karimnagar, Telangana,
India

Email: prasenjitmyname@gmail.com

[Home Page](#)



DR ANJU THAWARE

Associate professor, Dept of samhita Siddhant ,MGACRCH,salod wardha ,(DMIMSU,wardha)
Maharashtra ,India

Email: anju.samhita@dmimsu.edu.in

[Home Page](#)



DR. NITIN SHARMA

Department of Biotechnology Chandigarh Group of Colleges, Landran, Mohali- 140307

Email: nitin.3994@cgc.edu.in

[Home Page](#)



PROF. GALLA RAJITHA

Prof. G. Rajitha, Professor, Institute of Pharmaceutical Technology, Sri Padmavati Mahila Visvavidyalayam, Tirupati - 517502, Andhra Pradesh, India

Email: rajitha.galla@gmail.com

[Home Page](#)



ASHISH GUPTA

Flat no.E113,Nariman Point, Mahalaxmi Nagar Indore MP

Email: ashishgupta@acropolis.edu.in

[Home Page](#)



HUSAM AL-HRAISHAWI

195 Little Albany St,

Email: hra10@scarletmail.rutgers.edu

[Home Page](#)



TUHIN SARKAR

Jakir Hossain Institute of Pharmacy, Vill. & P.O.- Miapur, Dist.- Murshidabad, Pin: 742225, West Bengal.

Email: gantuhin@gmail.com

[Home Page](#)



BHUPENDRA G. PRAJAPATI

Ganpat Vidyanagar, Mahesna 384012

Email: bhupen27@gmail.com

[Home Page](#)

DR K RAJYALAKSHMI

Department of Pharmaceutical Chemistry, Vignan Pharmacy College, Vadlamudi, Guntur, A.P.



Email: drkrl3579@gmail.com
[Home Page](#)



SOURAVH BAIS
474 VIP PARASPAR NAGAR
Email: souravh2008.123@rediffmail.com
[Home Page](#)



DR. D.S.JAYALAKSHMI
Sathyabama Institute of Science and Technology (deemed to be University), Rajiv Gandhi Salai,
OMR
Email: jayaanand10@gmail.com
[Home Page](#)



DR. PARTHA NIYOGI
SCHOOL OF PHARMACY THE NEOTIA UNIVERSITY SARISHA, DIAMOND HARBOUR WEST
BENGAL- 743 368
Email: partha.niyogi@tnu.in
[Home Page](#)



DR. RAJIV DUTTA
Shobhit Institute of Engineering & Technology (Deemed-to-be-University) NH-58, Modipuram
Meerut, UP-250110. India
Email: director.sbt@gmail.com
[Home Page](#)



PRAVEEN KUMAR UPPALA
LIG 163 Alakananda colony, Vizianagaram, Andhra Pradesh
Email: praveen.chintu32@gmail.com
[Home Page](#)



RAMAKRISHNA REDDY H
#32, Shiva shakti, 4th Cross, KBL Elite layout, J.P.Nagar 8th Phase, Bangalore-560108,
Karnataka state, India.
Email: rkreddy_h@yahoo.co.in
[Home Page](#)



DR. PRAVIN KUMAR SHARMA

Acropolis Institute of Pharmaceutical Education and Research, Indore

Email: praveensharma910@gmail.com

[Home Page](#)



DR. FORAT YASIR ALJABERI

Chemical Engineering Department, College of Engineering, Al-Muthanna University, Samawa, Iraq

Email: furatyasir@mu.edu.iq

[Home Page](#)



DR. L. NANDHAKUMAR

Kastooribha Gandhi Pharmacy college Namakkal, Rasipuram

Email: drndkumar12@gmail.com

[Home Page](#)



PROF. DR. RAJIV DUTTA

SHOBHIT UNIVERSITY, GANGOH

Email: director.sbt@gmail.com

[Home Page](#)



AHMED ALI MHAWESH

Baghdad/Iraq Al-Ghadeer Quarter

Email: alshammariahmed.a.m@gmail.com

[Home Page](#)



DR JAGDISH KAKADIYA

Department of Pharmacology, Parul Institute of Pharmacy and Research, Parul University, Vadodara, Gujarat, India

Email: jagdishkakadiya@gmail.com

[Home Page](#)



MAJIDA HAMEED KHAZAAL

Kufa University

Email: majdahamed69@yahoo.com

[Home Page](#)



DR. SHOBHIT KUMAR

Dr. Shobhit Kumar, Associate Professor, Department of Pharmaceutical Technology, Meerut Institute of Engineering and Technology (MIET), NH-58, Delhi-Roorkee Highway, Meerut-250005, Uttar Pradesh, India. Tel: +91 9675598375 E-mail: shobhitkmr87@gmail.com
shobhit.kumar@miet.ac.in
Email: shobhit.kumar@miet.ac.in
[Home Page](#)



DR. P. DWARAKANADHA REDDY

Annamacharya College of Pharmacy, Rajampet-516126, Andhra Pradesh, India
Email: dwarakanadhareddyperam@gmail.com
[Home Page](#)



PROF. MATOLE VINOD KALIDAS

Shivai Charitable trust's College of Pharmacy, Koregaonwadi Tal. Omerga Dist. Dharashiv Maharashtra India
Email: matole7414@gmail.com
[Home Page](#)



SANKARGANESH

3/478, Ajith nagar, Sathankuppam, Kelambakkam-603103, Chennai, TN
Email: bilisankar@gmail.com
[Home Page](#)



ALAA HUSSEIN AL-DARRAJI

Iraq-Misan
Email: alaa.hussein@uomisan.edu.iq
[Home Page](#)



MANISH KUMAR

SD College, Barnala-148101, Punjab, India.
Email: manish@sdcollegeinstitutions.org
[Home Page](#)



DR. DINANATH TUKARAM GAIKWAD

223, Shamrao Kumbhar Nagar, Nanapatil Nagar, Kolhapur, Maharashtra, India
Email: gddinanath@gmail.com
[Home Page](#)



BEHZAD FOROUTAN

Department of Pharmacology School of Medicine Shahroud University of Medical Sciences

Shahroud, IRAN

Email: behzad_foroutan@hotmail.com

[Home Page](#)



DR. AMIT ROY

Principal, Columbia Institute of Pharmacy, Raipur CG India

Email: wakratund@gmail.com

[Home Page](#)



P. PARTHIBAN

Centre for R&D, PRIST University, Thanjavur-613403, India

Email: parthisivam@yahoo.co.in

[Home Page](#)



PROF. D. K. TRIPATHI

Principal, Rungta Institute of Pharmaceutical Sci. and Research, Bhilai CG India

Email: editor.rjpt@gmail.com

[Home Page](#)



DR. P. KUMARAVEL

Assistant Professor, Department of Biotechnology, Vysya College, Masinaickenpatty, Salem-636103. Tamil Nadu, India.

Email: kumaravelbiotech@gmail.com

[Home Page](#)



DR GIRISH PAI K

Faculty - Dept of Pharmaceutics Manipal college of pharmaceutical sciences Manipal University, Madhav Nagar Manipal - 576104, Karnataka State, India

Email: girish.pai@manipal.edu

[Home Page](#)



DR. AJAY V. PATHAK

House No.33 Ravindra nagar Nagpur-440022 Maharashtra, INDIA

Email: a.pathak4@gmail.com

[Home Page](#)



AYUSH DOGRA

department of electronics and communications, panjab university chandigarh

Email: ayush123456789@gmail.com

[Home Page](#)



DR. PRATIBHA VYAS

Department of Microbiology, College of Basic Sciences and Humanities, Punjab Agricultural University, Ludhiana-141004, Punjab, India.

Email: pratibha.19064@pu.co.in

[Home Page](#)



IHSAN HABIB DAKHIL

Engineering College, Al-Muthanna University, Iraq

Email: ihsanelshahiri@yahoo.com

[Home Page](#)



DR. JAYASSHREE SEN

J.N.M.C.&A.V.B.R.H., Sawangi, Wardha, Maharashtra 442007

Email: jayashree_sen@rediffmail.com

[Home Page](#)



IMAD

University of Babylon

Email: imad_dna@yahoo.com

[Home Page](#)

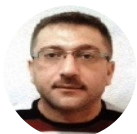


RIM M. HARFOUCH

Al Andalus university, Qadmus, Tartous, Syria

Email: rimharfouch@au.edu.sy

[Home Page](#)



MOHAMMAD JAWAD AL-JASSANI

Department of Microbiology, College of Science, Al-Karkh University of Science, Iraq.

Email: pcr2000@yahoo.com

[Home Page](#)

REVIEWERS



DR. SUBHASHIS DEBNATH

Seven Hills College of Pharmacy Venkatramapuram, Tirupati- 517561

Email: subhashis.ooty@gmail.com

[Home Page](#)



GAURAV KUMAR

Department of Microbiology School of Bioengineering and Biosciences Lovely Professional University Phagwara, 144411, Punjab, India

Email: gau_ravkr@yahoo.com

[Home Page](#)



RUCHI VERMA

manipal college of pharmaceutical sciences, manipal university, karnataka, India.

Email: ruchi.verma@manipal.edu

[Home Page](#)



DR. KETAN VINODLAL SHAH

201, Rudrax Appartment, Guruprasad Society, Nehind Telephone exchange, Krishnanagar Main road, Rajkot

Email: ketan421981@gmail.com

[Home Page](#)



K SUJANA

university college of pharmaceutical sciences Acharya Nagarjuna university

Email: sujana_36@yahoo.co.in

[Home Page](#)



DR.P.BRINDHA DEVI

Vels University, Velan Nagar, PV Vaithiyalingam Road, Pallavaram

Email: pbrindhadevi@gmail.com

[Home Page](#)



DR VAMSHI KRISHNA TIPPAVAJHALA

Assistant Professor-Senior Scale Department of Pharmaceutics Manipal College of
Pharmaceutical Sciences Manipal University Manipal, Karnataka, India

Email: krissrcm@gmail.com

[Home Page](#)



ZAIN BAAITY

Syria, Latakia

Email: zein_syria@hotmail.com

[Home Page](#)



LAITH AHMED NAJAM

Mosul University, College of Science, Physics Dept., Mosul

Email: Prof.lai2014@gmail.com

[Home Page](#)



VEEREN DEWOOLKAR

4824 Washtenaw Ave, Apt C1, Ann Arbor, MI 48108

Email: veerenrx@gmail.com

[Home Page](#)



NEERAN OBIED JASIM

University of AL-Qadisiyah college of Pharmacy Iraq

Email: neran.jasim@qu.edu.iq

[Home Page](#)



MAHMOUD NAJIM ABID

Mustansiriyah University, College of Science, Department of Chemistry

Email: mahmoudaljibouri@gmail.com

[Home Page](#)



NILESH PATEL

B/103,Snehkunj Elegance,Behind Shivalay Parisar Kudasan,Gandhinagar-382421,Gujarat

Email: nilesh33.emcure@gmail.com

[Home Page](#)



NEERAN OBIED JASIM

university of AL-Qadisiyah -college of science-Iraq

Email: neran.jasim@qu.edu.iq

[Home Page](#)



MARWAN MAHMOOD SALEH

Anbar-Ramadi- Habbaniya- 4-4-17

Email: ah.marwan_bio@uoanbar.edu.iq

[Home Page](#)



PALLAVI LAXMAN PHALKE

Parul University, Limda, Waghodiya. Vadodara-391760, Gujarat India.

Email: falkepallavi@gmail.com

[Home Page](#)



DR. ANUP S. HENDRE

Biochemistry Department Krishna Institute of Medical Sciences, Malkapur Karad. Dist-Satara.

Email: anupviews@gmail.com

[Home Page](#)



SURENDRA KUMAR GAUTAM

Kamla Nehru Institute of Management & Technology, NH96 Faizabad Bypass Road Faridipur Campus

Email: surendra_bkt95@yahoo.in

[Home Page](#)



DR U R RAKSHITH

Dr U R Rakshith Lecturer JSS College of Pharmacy, JSS Academy of Higher Education and Research Shivarathreeswara Nagar, Mysuru-570015 Karnataka , India

Email: urakshith@jssuni.edu.in

[Home Page](#)



RAMU SAMINENI

H.N0-1-123-A; C/O SIVARAMAKRISHNA SAMINENI MANDEPUDI, AMARAVATHI

Email: samineni.ramu@gmail.com

[Home Page](#)



DHAVAL PATEL

A-104, Maruti Aamrakunj, Sargasan, Gandhinagar-382421

Email: dhaval.nine@gmail.com

[Home Page](#)



AKHIL NAGAR

R C PATEL INSTITUTE OF PHARMACEUTICAL EDUCATION AND RESEARCH

Email: akkipharma23@gmail.com

[Home Page](#)



SUNANDAR IHSAN

Kampus Hijau Bumi Tridharma Universitas Halu Oleo Fakultas Farmasi, Jl. H.E.A Mokodompit Anduonuhu, Kendari, Indonesia

Email: sunandarihsan@uho.ac.id

[Home Page](#)



ANAS TARIK NAFEI

Baghdad, Qadissiyah Express way

Email: anasalhamdany@yahoo.com

[Home Page](#)



DR.KUMARASWAMY GULLAPELLI

STREET NUMBER 4 , BHAVANI NAGAR , NACHARAM, HYDERABAD NACHARAM, Hyderabad, Telangana, pincode: 500076

Email: kumargullapelli001@gmail.com

[Home Page](#)



RADHWAN AL-ZIDAN

Almothana district, Mosul, Iraq

Email: radhwan.alzidan@uomosul.edu.iq

[Home Page](#)



YAHIA M. MOUALLA

faculty of pharmacy, Tishreen university, Latakia, Syria

Email: yahia.moualla@tishreen.edu.sy

[Home Page](#)



SUHAS SURESH AWATI

Assistant Professor, Dr. Shivajirao Kadam College of Pharmacy, Kasabe Digraj, Baganvat, Tal-Miraj, Dist- Sangli, Maharashtra. 416301

Email: awatiss@gmail.com

[Home Page](#)



SHAIK FIROZ

Assistant Professor, Department of Pharmaceutics, Sree Vidyanikethan College of Pharmacy, Sree Sainath Nagar, A.Rangampet-517102.

Email: firoz.kallur@gmail.com

[Home Page](#)



DR NASEEF PP

Vice Principal, Moulana College of Pharmacy, Near Angadippuram Railway Station, Malappuram, Kerala, India 679321

Email: drnaseefpp@gmail.com

[Home Page](#)



DR. ARINDAM CHATTERJEE

School of Pharmaceutical Sciences Jaipur National University (SADTM Campus) Near RTO Office, Jaipur Agra Bypass Jagatpura, Jaipur, Rajasthan India-302017

Email: chatterjee.arindam@hotmail.com

[Home Page](#)



S RAJARAJAN

Department of Pharmaceutics, Karnataka College of Pharmacy 33/2, Thirumena Halli, Hegde Nagar Main Road, Bangalore-560064

Email: pharmking@gmail.com

[Home Page](#)



DR . RAHUL RADHAKRISHNAN

Manasam, Edavattom, Chirakkara (PO) ,Kollam, Kerala

Email: drrahulpharmd@gmail.com

[Home Page](#)



RIM M. HARFOUCH

0624 Albaath street, Latakia, Syria

Email: rimharf@yahoo.com

[Home Page](#)



ARUN A

3/31 periyar street, ramapuram chennai 600089
Email: arunarticle2016@gmail.com
[Home Page](#)



ABDUL SALEEM MOHAMMAD

Department of Pharmaceutical Analysis and Quality Assurance, Nizam Institute of Pharmacy, Deshmukhi (V), Pochampally (M), Behind Mount Opera, Nalgonda (Dist)-508284, Telangana, India.
Email: mohdsaleempharma@gmail.com
[Home Page](#)



KARTHIKEYAN T

registrar nimhans
Email: karthik_77in@yahoo.co.in
[Home Page](#)



DR. PUTTA RAJESH KUMAR

Amdapur X Road, Yenkapally, Moinabad, Ranga Reddy, Hyderabad, Telangana 500075 INDIA
Email: prkbpc@gmail.com
[Home Page](#)



AAMINAH NAJMUS SAHAR

H.no: 121, Pension lane, New Bowenpally Secunderabad- 500011
Email: aaminahnajmus@yahoo.in
[Home Page](#)



ZAINAB HAITHAM FATHI

College of Pharmacy, University of Mosul
Email: zainabh@uomosul.edu.iq
[Home Page](#)



DR. OM PRAKASH RANJAN

Faculty of Pharmacy, Sachchidanad Sinha College, Aurangabad, Bihar.
Email: omprakasranjan@gmail.com
[Home Page](#)



SHASHIKANT SUDARSHAN UPADHYE

Annasaheb Dange College of B.Pharmacy, Ashta Tal: Walwa, Dist: Sangli 416301 , Maharashtra, India

Email: ssupadhye7@gmail.com

[Home Page](#)



VISHAL KUMAR BISWKARMA

KSCP, Subharti University, Meerut, Uttar Pradesh, India

Email: vishalkumarbiswkarma@gmail.com

[Home Page](#)



DR. C. JANANI

Dr. C. Janani, Srimad Andavan Arts and Science College, Nelson Road, TV Kovil, Trichy-05

Email: janabio.net@gmail.com

[Home Page](#)



RANJAN KUMAR SINGH

g d memorial college of pharmacy, kbhb, jodhpur.342005

Email: rsingh8@gmail.com

[Home Page](#)



BIMESH KUMAR

BLOCK 4, ROOM NO 203, SCHOOL OF PHARMACEUTICAL SCIENCES, LOVELY PROFESSIONAL UNIVERSITY, PHAGWARA, PUNJAB, 144411.

Email: bimlesh1pham@gmail.com

[Home Page](#)



DR.BISWARANJAN RAY

Associate prof, Dept. of Pharmacology, College of Pharmaceutical Sciences, Puri, Odisha

Email: crabiswa@gmail.com

[Home Page](#)



ANAR J PATEL

Sal Institute of Pharmacy, Ahmedabad

Email: anar.patel@sal.edu.in

[Home Page](#)



GANESH BARKADE

Dr. Vithalrao Vikhe Patil Foundation's College of Pharmacy, Ahmednagar, MH, India-414111 Vikhe Patil Foundation

Email: ganeshbarkade7@gmail.com

[Home Page](#)



DR. VEDAMURTHY JOSHI

Associate professor, Sri Adichunchanagiri College of Pharmacy, BG Nagara Nagamangala Tq Mandya dist Karnata

Email: vedamurthyjoshi@gmail.com

[Home Page](#)



AVINASH BABURAO THALKARI

Kanadi Road Kaij Vasant Pharmacy College Kaij Kanadi Road Kaij

Email: avinashthalkari@gmail.com

[Home Page](#)



DR. P. PRAVEEN REDDY

Vivekananda Degree and PG College, Karimnagar-505001, Telangana

Email: microppr@gmail.com

[Home Page](#)



MUTHUKUMAR.S

45,U.K.Thevar Street, Suler, Coimbatore-641402

Email: pharmuthu@gmail.com

[Home Page](#)



D CHANDRA SEKHAR NAIK

KVSR Siddhartha college of pharmaceutical sciences poly clinical road Vijayawada-10

Email: chandu.desavath@gmail.com

[Home Page](#)



BHARAT MISHRA

Nirmala college of pharmacy, Nirmala Hills, Muvattupuzha, Ernakulam, Kerala, India

Email: bharatekash@gmail.com

[Home Page](#)



MATOLE VINOD KALIDAS
AT POST AURAD TAL.OMERGA DIST .OSMANABAD
Email: vinodmatole57@gmail.com
[Home Page](#)



NIRMAL THAKKER
B-602, Tirupati Aakruti Greenz, Behind Nirma University, S.G. Highway, Ahmedabad-382481,
Gujarat, India
Email: nirmalthakker117@yahoo.com
[Home Page](#)



JASWANTH GOWDA B.H.
Yenepoya (Deemed to be University), Deralakatte, Mangalore, India-575018.
Email: jaswanth_14601@yenepoya.edu.in
[Home Page](#)



ZEINA ABDULMUNIM ALTHANOON
Albaladiyat Quarter Mosul Iraq
Email: ph.zeinaalthanoon@gmail.com
[Home Page](#)



SHIVAVEERAKUMAR
Department of Microbiology, Davangere University, Davanagere - 577002, Karnataka
Email: shiv_math1984@rediffmail.com
[Home Page](#)



DR.V.K.EVANJELENE
16, Anbu Nagar, gorimedu, Salem - 636 008
Email: evankutty@gmail.com
[Home Page](#)



ASHISH TALE
MUPS College of Pharmacy, Degaon, Tq. Risod, Dist. Washim-444506 (M.S) India
Email: ashishtale93@gmail.com
[Home Page](#)



DR. C. JANANI

Srimad Andavan Arts and Science College, Nelson Road, TV Kovil TV kovil
Email: janabio.net@gmail.com
[Home Page](#)



PRATHEEP THANGARAJ

Department of Biotechnology, PRIST Deemed to be University, Thanjavur-613403, India.
Email: pratheetp@gmail.com
[Home Page](#)



SHAIMAA AHMAD HASSAN

AlKarkh University of science / Baghdad / Iraq
Email: dr.shaimaa_altaee@kus.edu.iq
[Home Page](#)



DR ANUP NAHA

Manipal College of Pharmaceutical Sciences, MAHE, Manipal, Karnataka-576104
Email: anupnaha@gmail.com
[Home Page](#)



EIMAN SHAHROUR

lattakia- syria
Email: eimanm.shahrour@gmail.com
[Home Page](#)



DR. DEVAKUMAR DINESH

Department of Zoology, Bharathiar University Coimbatore-641046 Tamilnadu India
Email: devadinesh4041@gmail.com
[Home Page](#)



AUDUMBAR DIGAMBAR MALI

At. Po. Andhalgaon, Tal-mangalwedha, Dist- Solapur, Pin Code:- 413305, Maharashtra, India.
Email: maliaudu442@gmail.com
[Home Page](#)



DR. MITTAL MAHESHWARI
A- One Pharmacy College, Ahmedabad
Email: mittalmaheshwary@gmail.com
[Home Page](#)



ABDUL AZEEM
Research Scholar, Electrical Engineering Department Jamia Millia Islamia-New Delhi
Email: azeemnith@gmail.com
[Home Page](#)



DR. V. VADIVEL
PG & Research Department of Botany, V.O. Chidambaram College, Tuticorin - 628008 Tamil Nadu, India
Email: drvvadivel@gmail.com
[Home Page](#)



PROF.(DR.) KUMARASWAMY.GANDLA
Dr.Kumara Swamy.Gandla Associate Editor of RJPT (Research journal of Pharmacy and Technology Chaitanya Deemed to be University, Hanamkonda, Warangal-Urban (Dist), Telangana 506001-India. Mobile: +91-9000973789 / +91-7801022789
Email: drkumaraswamygandla@gmail.com
[Home Page](#)



MR. PATIL AMOL MANIK
AT/P- KASEGAON TAL- WALWA DIST- SANGLI PIN CODE- 415404 MAHARASHTRA
Email: amp6389@gmail.com
[Home Page](#)



MOH MIRZA NURYADY
Blok HC No. 14, Jl. Intan 2, Perum GPA, Ngijo, Kec. Karangploso, Kabupaten Malang, East Java
Email: mirzanuryady@umm.ac.id
[Home Page](#)



SHAIMAA AHMAD HASSAN
College of Remote Sensing & Geophysics, Al Karkh University of Science, Baghdad, Iraq
Email: dr.shaimaa_altaee@kus.edu.iq
[Home Page](#)



MAUSAMI VAGHELA

New College Wadi-3, B/H Punjab Honda, Opp. sitvan Flat, Kalawad Road, Rajkot.

Email: mausami_2123@yahoo.com

[Home Page](#)



KOTESHWARA MUDIGONDA

Suven Life Sciences Limited, Hyderabad, India

Email: koteswara_mudigonda@yahoo.com

[Home Page](#)



DR. SWAMY C T

51, Anna Arch Rd,NSK Nagar, Anna Nagar, AA Hospital Campus

Email: swamyc23@gmail.com

[Home Page](#)



KHUDHAIR ABBAS KAREEM AL-RUDAI

Iraq, Baghdad

Email: khudhair.2010@yahoo.com

[Home Page](#)



BALJEET YADAV

1202 H, Coralwood Sector 84, Gurugram INDIA

Email: baljeet.yadav@gdgu.org

[Home Page](#)



DR NILIMA ABHIJEET THOMBRE

MET's Institute Of Pharmacy, Bhujbal Knowledge City, Adgaon, Nasik-422003, Maharashtra,India.

nilimat_iop@bkc.met.edu 09422284082 , 09960646693

Email: nilimat_iop@bkc.met.edu

[Home Page](#)



SNIGDHO DAS

Flat No.6,Ira Appartments-2,Jadunath Ukil Road, Kudghat

Email: snigdho1991@gmail.com

[Home Page](#)



DR SUDARSAN BISWAL

O/o the Asst. Drugs Controller, Bhubaneswar Circle II, Bhubaneswar, Khordha, Odisha, India

Email: drsbiswaldi@gmail.com

[Home Page](#)



NAZIYA IQBAL KHAN

38 Sahyadri nagar Isbavi Pandharpur 413307 Solapur Maharashtra

Email: naziya.aara@gmail.com

[Home Page](#)



DR GYANENDRA KUMAR SHARMA

Anand College of Pharmacy, Agra

Email: gyanendrasharma.acp@sgei.org

[Home Page](#)



MISS.MALI SUNAYANA MALLAPPA

A/P-Andhalgaon, Pin No. -413 305 Tal- Mangalwedha, Dist-Solapur, Maharashtra, India

Email: sunayanamali01@gmail.com

[Home Page](#)



DR. ARUNACHALAM MUTHURAMAN

Dr. Arunachalam Muthuraman, M. Pharm., Ph.D. Associate Professor, Pharmacology Unit, Faculty of Pharmacy, AIMST University, Semeling, 08100 Bedong, Kedah Darul Aman, Malaysia.

E-mail: arunachalammu@gmail.com Phone No: +60-1136293386 (Malaysia); +91-9988040886 (India) Malaysia Office: +60-44298000 (Extn: 1281 / 1284);

Email: arunachalammu@gmail.com

[Home Page](#)



MUKUL SHARMA

Faculty of Pharmacy, Medi-Caps University, Indore

Email: mukul.sharma@medicaps.ac.in

[Home Page](#)



PROF. DR. NAGHAM MAHMOOD ALJAM

Professor , Department of Chemistry , Synthetic Field, Iraq.

Email: dr.nagham_mj@yahoo.com

[Home Page](#)



PRASHANT PANDEY

Department of Pharmaceutical Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow

Email: mrpandeyprashant@gmail.com

[Home Page](#)



PATHAN HUJEB AFSAR KHAN

Shreeyash Institute of Pharmaceutical Education and Research Aurangabad, Maharashtra, India.

Email: pathanhujeb@gmail.com

[Home Page](#)



DR. SHIKHA MAHESHWARI

Pushpanjali Enclave Pitampura Delhi

Email: shikhamaheshwarimohta@gmail.com

[Home Page](#)



DR V N MEENA DEVI

Noorul Islam Centre for Higher Education Kumaracoil, Kanyakumari Dist. Tamilnadu 629180 India.

Email: meenadevi@niuniv.com

[Home Page](#)



PRASHANT PANDEY

Department of Pharmaceutical Sciences, Babasaheb Bhimrao Ambedkar University (A Central University), Lucknow, Uttar Pradesh, India

Email: drpandeyprashant@outlook.com

[Home Page](#)



MR. TUSHAR PRADIP DUKRE

At- Malwadi; Post- Bota.

Email: tusharpd23@gmail.com

[Home Page](#)



DR. DATTATRAYA MANOHAR SHINKA

Rajiv Nagar Nashik Vaibhav Colony

Email: dattashinkar@gmail.com

[Home Page](#)



PROF. SACHIN NAMDEO KOTHAWADE

Sitabai Thite College of Pharmacy, Pune-Nagar Bypass, Behind Hudco Colony, Shirur, Tal - Shirur, Dist - Pune, Pin - 412210

Email: sachin.kothawade23@gmail.com

[Home Page](#)



DR.SIVARAMAN DHANASEKARAN

Pandit Deendayal Energy University, Gandhinagar, Gujarat

Email: sivaramand83@gmail.com

[Home Page](#)



ALI MAHMOOD RAYSHAN

Iraq, Karbala, City Center

Email: alireshan@g.alzahu.edu.iq

[Home Page](#)



DUKRE TUSHAR PRADIP

At- Satral, Post- Songaon, Tal- Rahuri, District-Ahmednagar, 413711

Email: tusharpd23@gmail.com

[Home Page](#)



DR. SK. ARIFA BEGUM

Dr. Sk. Arifa Begum, Assistant Professor, KVSR Siddhartha College of Pharmaceutical Sciences, Siddhartha Nagar, Vijayawada - 520 010, Andhra Pradesh, India.

Email: arifashaik2007@gmail.com

[Home Page](#)



RUPALI NIRMAL

Sahajanandnagar

Email: rupalinirmalcpn@gmail.com

[Home Page](#)



RISHU YADAV

352/1 n.l.c. Kidwai Nagar Kanpur

Email: rishu.yadav789@gmail.com

[Home Page](#)



DR. YASMIN HAMID MOMIN

Annasaheb Dange College of B.Pharmacy, Ashta 416301

Email: mullays413@gmail.com

[Home Page](#)



PRAVEEN KUMAR UPPALA

LIG 163, Alakananda Colony, Vizianagaram, Andhra Pradesh

Email: praveen.chintu32@gmail.com

[Home Page](#)



DR. EKA INDRA SETYAWAN

Department of Pharmacy Udayana University

Email: ekaindrasetyawan@unud.ac.id

[Home Page](#)



DR. MOHAN GANDHI BONTHU

V. V. Institute of Pharmaceutical Sciences, Gudlavalleru, Krishna District 521356.

Email: bmgandhipharma@gmail.com

[Home Page](#)



SWATI GOKUL TALELE

Sandip Institute of Pharmaceutical Sciences, Nashik

Email: swatitalele77@gmail.com

[Home Page](#)

ARTICLES IN VOLUME - 17, ISSUE - 1

Online Since: Friday, Jan 19, 2024 [Views: 31302]

Effect of Pectin and Citric acid on Sensory Evaluation for Consumer's acceptability of Preserved Guava Jelly

Author(s): Gul-e-Saba Chaudhry, Abdul Matin, Isfaq Wahid Bin Rahim, Mizanur Rahman, Abdah Akim, Yeong Yik Sung, Tengku Muhammad Tengku Sifzizul

DOI: [10.52711/0974-360X.2024.00001](https://doi.org/10.52711/0974-360X.2024.00001)

Views: 0 (pdf), 1417 (html)

Access:  Closed Access

Cite: Gul-e-Saba Chaudhry, Abdul Matin, Isfaq Wahid Bin Rahim, Mizanur Rahman, Abdah Akim, Yeong Yik Sung, Tengku Muhammad Tengku Sifzizul. Effect of Pectin and Citric acid on Sensory Evaluation for Consumer's acceptability of Preserved Guava Jelly. *Research J. Pharm. and Tech* 2024; 17(1):1-4. doi: 10.52711/0974-360X.2024.00001

[Read More](#)

Enhancement of Physicochemical and Pharmacokinetic Characteristics of Ranolazine drug substance using Cocrystalization Technique

Author(s): Gunjan Vyas, Shah Jigar, Shery Jacob

DOI: [10.52711/0974-360X.2024.00010](https://doi.org/10.52711/0974-360X.2024.00010)

Views: 0 (pdf), 722 (html)

Access:  Closed Access

Cite: Gunjan Vyas, Shah Jigar, Shery Jacob. Enhancement of Physicochemical and Pharmacokinetic Characteristics of Ranolazine drug substance using Cocrystalization Technique. *Research Journal of Pharmacy and Technology*. 2024; 17(1):59-6. doi: 10.52711/0974-360X.2024.00010

[Read More](#)

Simultaneous determination of Cefepime and Tazobactam by using Hyphenated Liquid Chromatography (UPLC-MS/MS)

Author(s): Jabeen, Suma B.V.

DOI: [10.52711/0974-360X.2024.00011](https://doi.org/10.52711/0974-360X.2024.00011)

Views: 0 (pdf), 558 (html)

Access:  Closed Access

Cite: Jabeen, Suma B.V. Simultaneous determination of Cefepime and Tazobactam by using Hyphenated Liquid Chromatography (UPLC-MS/MS). *Research Journal of Pharmacy and Technology*. 2024; 17(1):67-3. doi: 10.52711/0974-360X.2024.00011

[Read More](#)

A Green UPLC Method for the Simultaneous determination of Tenofovir and Amoxicillin in Biological Fluids and Dosage Forms

Author(s): Shaimaa Elsayed, Alaa El-Gindy, Yasser El-Shabrawy, ElSayed A. Ibrahim

DOI: [10.52711/0974-360X.2024.00012](https://doi.org/10.52711/0974-360X.2024.00012)

Views: 0 (pdf), 439 (html)

Access:  Closed Access

Cite: Shaimaa Elsayed, Alaa El-Gindy, Yasser El-Shabrawy, ElSayed A. Ibrahim. A Green UPLC Method for the Simultaneous determination of Tenofovir and Amoxicillin in Biological Fluids and Dosage Forms. *Research Journal of Pharmacy and Technology*. 2024; 17(1):74-0. doi: 10.52711/0974-360X.2024.00012

Read More

In Vitro Evaluation of Alpha Amylase and Alpha Glucosidase Inhibitory Activity of Kamadhenu Ark extracts of Climate Smart Crop Millets

Author(s): Venkata Lakshmi J, Ch. M. Kumari Chitturi, C. Appa Rao

DOI: [10.52711/0974-360X.2024.00013](https://doi.org/10.52711/0974-360X.2024.00013)

Views: 0 (pdf), 580 (html)

Access:  Closed Access

Cite: Venkata Lakshmi J, Ch. M. Kumari Chitturi, C. Appa Rao. In Vitro Evaluation of Alpha Amylase and Alpha Glucosidase Inhibitory Activity of Kamadhenu Ark extracts of Climate Smart Crop Millets. *Research Journal of Pharmacy and Technology*. 2024; 17(1):81-6. doi: 10.52711/0974-360X.2024.00013

Read More

Evaluation of the Bioactive compounds and its Functional role in the Aquatic weed Pistia stratiotes

Author(s): Gupta Varsha, Tyagi Saya, Jain Pankaj, Tripathi Rashmi

DOI: [10.52711/0974-360X.2024.00014](https://doi.org/10.52711/0974-360X.2024.00014)

Views: 0 (pdf), 464 (html)

Access:  Closed Access

Cite: Gupta Varsha, Tyagi Saya, Jain Pankaj, Tripathi Rashmi. Evaluation of the Bioactive compounds and its Functional role in the Aquatic weed Pistia stratiotes. *Research Journal of Pharmacy and Technology*. 2024; 17(1):87-5. doi: 10.52711/0974-360X.2024.00014

Read More

Formulation and Evaluation of Teneligliptin Nanosuspension

Author(s): Sreekala. MG, C. Rubina Reichal, Manju. S

DOI: [10.52711/0974-360X.2024.00015](https://doi.org/10.52711/0974-360X.2024.00015)

Views: 0 (pdf), 643 (html)

Access:  Closed Access

Cite: Sreekala. MG, C. Rubina Reichal, Manju. S. Formulation and Evaluation of Teneligliptin Nanosuspension. *Research Journal of Pharmacy and Technology*. 2024; 17(1):96-2. doi: 10.52711/0974-360X.2024.00015

Read More

Chromatographic Profiling and Cytotoxic studies of Extracts of Buchanania lanzan Spreng and Albizia lebbeck Benth

Author(s): Jyoti Shrivastava, T. Ratna Madhuri, Abhishek Shah

DOI: [10.52711/0974-360X.2024.00016](https://doi.org/10.52711/0974-360X.2024.00016)

Views: 0 (pdf), 419 (html)

Access:  Closed Access

Cite: Jyoti Shrivastava, T. Ratna Madhuri, Abhishek Shah. Chromatographic Profiling and Cytotoxic studies of Extracts of Buchanania lanzan Spreng and Albizia lebbeck Benth. *Research Journal of Pharmacy and Technology*. 2024; 17(1):103-8. doi: 10.52711/0974-360X.2024.00016

Read More

Correlation between PD-L1 and Ki-67 Expression at various T-stage Clear Cell Renal Cell Carcinomas

Author(s): Anny Setijo Rahaju, Alphania Rahniayu, Etty Hary Kusumastuti, Priangga Adi Wiratama, Pamela Kusumadewi P. Thaib, Mimi Takaria

DOI: [10.52711/0974-360X.2024.00017](https://doi.org/10.52711/0974-360X.2024.00017)

Views: 0 (pdf), 441 (html)

Access:  Closed Access

Cite: Anny Setijo Rahaju, Alphania Rahniayu, Etty Hary Kusumastuti, Priangga Adi Wiratama, Pamela Kusumadewi P. Thaib, Mimi Takaria. Correlation between PD-L1 and Ki-67 Expression at various T-stage Clear Cell Renal Cell Carcinomas. *Research Journal of Pharmacy and Technology*. 2024; 17(1):109-4. doi: 10.52711/0974-360X.2024.00017

[Read More](#)

Challenges and Strategies to develop RP-HPLC Method of L-Arginine with Polyphenolic compounds

Author(s): Palwinder Kaur, Manish Vyas, Surajpal Verma

DOI: [10.52711/0974-360X.2024.00018](https://doi.org/10.52711/0974-360X.2024.00018)

Views: 0 (pdf), 350 (html)

Access:  Closed Access

Cite: Palwinder Kaur, Manish Vyas, Surajpal Verma. Challenges and Strategies to develop RP-HPLC Method of L-Arginine with Polyphenolic compounds. *Research Journal of Pharmacy and Technology*. 2024; 17(1):115-9. doi: 10.52711/0974-360X.2024.00018

[Read More](#)

Reduced Progression of Diabetic Nephropathy in Streptozocin-Induced Diabetic rats by Lannea coromandelica Leaf Extract

Author(s): Galanki Vasantha, Ch Dayakar, D Vasudha, Iragavarapu Tejolahari, S Bala Chandrika

DOI: [10.52711/0974-360X.2024.00019](https://doi.org/10.52711/0974-360X.2024.00019)

Views: 0 (pdf), 317 (html)

Access:  Closed Access

Cite: Galanki Vasantha, Ch Dayakar, D Vasudha, Iragavarapu Tejolahari, S Bala Chandrika. Reduced Progression of Diabetic Nephropathy in Streptozocin-Induced Diabetic rats by Lannea coromandelica Leaf Extract. *Research Journal of Pharmacy and Technology*. 2024; 17(1):120-6. doi: 10.52711/0974-360X.2024.00019

[Read More](#)

Comparative Study of Phytochemicals present in a Polyherbal Anti-diabetic Formulation using Chemical methods and HPTLC methods

Author(s): Chitra Kamath, Swarupa Salvi

DOI: [10.52711/0974-360X.2024.00002](https://doi.org/10.52711/0974-360X.2024.00002)

Views: 0 (pdf), 361 (html)

Access:  Closed Access

Cite: Chitra Kamath, Swarupa Salvi. Comparative Study of Phytochemicals present in a Polyherbal Anti-diabetic Formulation using Chemical methods and HPTLC methods. *Research Journal of Pharmacy and Technology*. 2024; 17(1):5-0. doi: 10.52711/0974-360X.2024.00002

[Read More](#)

RESEARCH ARTICLE

Correlation between PD-L1 and Ki-67 Expression at various T-stage Clear Cell Renal Cell Carcinomas

**Anny Setijo Rahaju^{1,2,3*}, Alphania Rahniayu^{1,2,3}, Etty Hary Kusumastuti^{1,2},
Priangga Adi Wiratama^{1,2}, Pamela Kusumadewi P. Thaib^{1,2}, Mimi Takaria^{1,2}**

¹Department of Anatomical Pathology, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia.

²Dr. Soetomo General Academic Hospital, Surabaya, Indonesia.

³Universitas Airlangga Teaching Hospital, Surabaya, Indonesia.

*Corresponding Author E-mail: anny_sr@fk.unair.ac.id

ABSTRACT:

Renal cell carcinoma (RCC) is a malignant neoplasm originating from renal epithelium, with the clear cell renal cell carcinoma (ccRCC) being the most common type (80%) and the most common cause of death among other types of kidney cancer. Pathological stage is an important parameter that affects ccRCC survival, followed by nuclear grade. Pathological staging of RCC according to the AJCC (American Joint Committee on Cancer) TNM system 8th edition is based on local extension of the main tumor (T), involvement of lymph node (N), and metastasis (M). Ki-67 is a marker of proliferation used to assess tumor grade. High Ki-67 correlates with poor prognosis, advanced clinical and pathological features, thus Ki-67 can be used as a biomarker in the management of RCC. Ki-67 is routinely used to see the proliferation index in various cases of malignancy, but not in kidney malignancy. Programmed death ligand 1 (PD-L1) acts as a negative regulator of T cell-mediated anti-tumor immune responses. PD-L1 is expressed on T cells, B cells, macrophages, dendritic cells, endothelial cells and in various tumor cells including ccRCC. This study aims to determine the correlation between the expression of PD-L1 and Ki-67 in various T-stage clear cell renal cell carcinomas. **Material and Method:** This was an observational analytical study with cross-sectional approach toward 52 cases of ccRCC whose diagnosis was made histopathologically at the Anatomical Pathology Installation of Dr. Soetomo General Academic Hospital Surabaya from January 2014 to December 2020. Immunohistochemical staining was carried out using Ki-67 and PD-L1 antibodies, followed by an assessment using a scoring system. T-stage data were obtained from the patients' medical records which were then analyzed statistically with the Spearman test. **Result:** The study included 52 cases of ccRCC obtained from nephrectomy specimens at RSUD dr. Soetomo between 2014–2020. The age distribution of the subjects was 29–69 years and the mean and median age was 53 years. The ratio of male patients compared to female patients was 2.5:1. The majority was stage T2 (50%). Statistical test results showed no correlation between the expression of PD-L1 and Ki-67 in various T-stage clear cell renal cell carcinomas ($p=0.965$ and $p=0.680$). **Conclusion:** This study showed no correlation between the expression of PD-L1 and Ki-67 in various T-stage clear cell renal cell carcinomas. Nonetheless PD-L1 can be considered as an important biomarker with a poorer prognosis and aggressive clinicopathological findings in patients with RCC.

KEYWORDS: Clear cell renal cell carcinoma, T-stage, Ki-67, PD-L1, Kidney Cancer.

INTRODUCTION:

Renal cell carcinoma (RCC) is a malignant neoplasm originating from renal epithelium and the clear cell (ccRCC) is the most common type (80%) and the most common cause of death¹⁻³.

Pathological stage is an important parameter that affects ccRCC survival, followed by nuclear grade^{4,5}. Pathological staging of RCC according to the AJCC

(American Joint Committee on Cancer) TNM system 8th edition is based on local extension of the main tumor (T), involvement of lymph node (N), and metastasis (M)⁶. RCC therapy is surgery, palliative therapy, followed by chemotherapy. Many cases of RCC are resistant to conventional therapy (hormonal therapy, radiotherapy, and chemotherapy)⁷. Targeted therapy and immunotherapy were developed especially in cases of tumors with metastases or advanced stages^{8,9}. Single targeted therapy in the form of anti-angiogenesis alone does not show any lasting response and may cause toxic side effects^{10,11}. PD-1/PD-L1-based immune-checkpoint inhibitor (ICI) regimen is a new hope as the first line of RCC therapy in metastatic cases¹⁰.

Programmed death ligand 1 (PD-L1) acts as a negative regulator of T cell-mediated anti-tumor immune responses. PD-L1 is expressed on T cells, B cells, macrophages, dendritic cells, endothelial cells and in various tumor cells including ccRCC^{12,13}. PD-L1 expression in tumor cells is associated with high nuclear grade, tumor size, clinical stage, poor prognosis, and overall survival in ccRCC patients¹⁴. Previous studies suggested that anti-PD-L1, as an ICI, holds great therapeutic potential in ccRCC, especially in advanced cases which are often resistant to conventional therapy¹⁰.

Ki-67 is a marker of proliferation used to assess tumor grade^{15,16}. High Ki-67 correlates with poor prognosis, advanced clinical and pathological features, thus Ki-67 can be used as a biomarker in the management of RCC¹⁷⁻¹⁹. Ki-67 is routinely used to see the proliferation index in various cases of malignancy, but not in kidney malignancy. This study analyzed the correlation between the expression of PD-L1 and Ki-67 in various T-stage clear cell renal cell carcinomas.

MATERIAL AND METHODS:

This was an observational analytical study with cross-sectional approach carried out on 52 paraffin blocks of ccRCC whose diagnosis was made histopathologically from nephrectomy specimens at the Anatomical Pathology Installation of Dr. Soetomo General Academic Hospital Surabaya from January 2014 to December 2020 who fulfilled the inclusion criteria using the consecutive sampling technique. Data on age, sex, location and number of tumors, as well as the TNM stage data were obtained from the patients' medical records and the Anatomical Pathology report. Tumor grade data were obtained from re-reading HE slides.

This study has received ethical approval from the Health Research Ethics Commission, RSUD dr. Soetomo Surabaya. The subjects were obtained from paraffin blocks contained in the medical records of the Anatomical Pathology Installation of RSUD dr.

Soetomo Surabaya.

Immunohistochemical staining was carried out using Ki-67 and PD-L1 antibodies. The paraffin blocks were cut 4 μ m, deparaffinized, and rehydrated with alcohol periodically. It was then heated with citrate buffer pH 7–7.3 for 20 minutes in the microwave. The primary antibodies, namely PD-L1 (28-8) Rabbit Monoclonal Primary Antibody (438R-14 Cell Marque/RabMab) and Ki-67 (SP6) Rabbit Monoclonal Primary Antibody (901-325-09282 Biocare Medical), were dripped with a dilution of 1:100 at 40°C overnight. The secondary antibody was then dripped and incubated for 20 minutes. As the final step, diaminobenzidine (DAB) was dripped and the counterstain was carried out with Meyer Hematoxylin.

The stained slides were then graded and scored to obtain the data. The results of the assessment of Ki-67 and PD-L1 expression in patients with ccRCC will be compared with the T-stage data of patients described as stage T1, T2, T3 and T4. All data obtained were analyzed by Spearman test.

RESULTS AND DISCUSSION:

The subjects of this study were 52 cases of ccRCC obtained from nephrectomy specimens at RSUD dr. Soetomo Surabaya between 2014 – 2020. Data on the age distribution were: 21 – 30 years (3.8%), 31 – 40 years (1.92%), 41 – 50 years (34.61%), 51 – 60 years (34.61%), and 61 – 70 years (25%), with a median and median age of 53 years. The age range was 29 – 69 years which is slightly lower than the average age in the literature^{20,21}.

Some literature states that the majority of ccRCC are sporadic (95%), while the remaining cases (5%) are associated with genetic disorders such as Von Hippel Lindau disease and tuberous sclerosis²⁰. Sporadic ccRCC occurs mainly in the sixth to eighth decades, with a median age at diagnosis of 64 years (19 – 80 years)^{21,22}. In the Asian group, this figure is lower with an average age of 57.6 years^{20,23}. Sporadic renal carcinoma is rarely found in young age, but in recent years the incidence of renal carcinoma in this group tends to increase and may be associated with certain genetic disorders^{21,22}.

The number of male ccRCC patients is higher than female patients with a ratio of 2.5:1. This is in accordance with Globocan data 2020, which state that the incidence rate in male patients is higher than female patients with a ratio of 1.5:1^{24,25}.

The majority of patients presented to RSUD dr. Soetomo had malignancy in one of their kidneys (71%). As many as 54% of them had tumor on both kidneys, 24% on the

superior pole, 18.8% on the medial pole, and 2.7% on the inferior pole. There were 29% cases of multifocal and 80-85% cases of primary RCC originate in the renal cortex. Based on the literature, ccRCC tumors are usually solitary in the renal cortex and can occur in both kidneys in equal proportions and there are renal carcinomas associated with genetic disorders such as VHL (<5% of cases), multifocal and/or bilateral tumors, and found in young age²⁶.

In this study, the majority of patients had high grades, namely 27 patients of grade 4(51.9%) and 14 patients of grade 3(27%). A high grade indicates a poor prognosis. Grade in RCC is a prognostic factor which has been used since a hundred years ago. Determination of grade in RCC mainly uses nuclear morphology, which is recommended to assess visible or prominent nuclei and eosinophilic color in nuclei, as well as the presence of large tumor cells, sarcomatoid and rhabdoid components²⁷. The RCC grading system is determined by the International Society of Urological Pathology (ISUP) and the World Health Organization (WHO), which is then included in the WHO/ISUP grading classification in the fourth edition of the WHO classification of tumors of the urinary system and male genital organs (2016). This grading system applies to clear cell and papillary RCC types²⁷. The consensus used is to determine the nuclei that are visible or prominent as grade 1 to 3 and the presence of large tumor cells, sarcomatoid and rhabdoid components as grade 4^{28,29}.

This study on Renal Cell Carcinomagave different results from other studies. It could be due to the process of staining techniques in which the results do not accurately reflect the actual PD-L1 expression status. Besides that, it could also be because tumor cells are strongly influenced by the time and location of the tumor so that it can affect the interpretation of the results. The clonal differences and tumor microenvironment can also influence PD-L1 expression in. All of these factors can lead to differences in PD-L1 expression. However, the use of PD-L1 as an exclusive biomarker for cancer immunotherapy should also be considered as an alternative for patients to choose targeted therapy regimens to benefit from immunotherapy³⁰.

Table 1: Characteristic of clinicopathological profile.

Characteristics	n	(%)	
Year	2014	8	15.4
	2015	6	11.5
	2016	11	21.1
	2017	7	13.5
	2018	10	19.2
	2019	3	5.8
	2020	7	13.5
Age	21-30 years	2	3.9

	31-40 years	1	1.9	
	41-50 years	18	34.6	
	51-60 years	18	34.6	
	61-70 years	13	25	
Sex	Female	15	28.8	
	Male	37	71.2	
Tumor Location	Unifocal	Superior pole	9	17.3
		Medial pole	7	13.5
		Inferior pole	1	1.9
		Entire kidney	20	38.4
	Multifocal	15	28.8	
T stage	pT1	6	11.6	
	pT2	26	50	
	pT3	15	28.8	
	pT4	5	9.6	
Tumor grade	G1	3	5.8	
	G2	8	15.4	
	G3	14	26.9	
	G4	27	51.9	
PDL-1	Negatif	7	13.5	
	1-10	15	28.8	
	>10	30	57.6	
Ki67	Negatif	0	0	
	1-10	49	94.2	
	>10	3	5.8	

Table 2: The difference between Ki67 and PDL-1 with stage T.

T	Ki67	PDL1
Kruskal-Wallis H	0.274	1.509
df	3	3
Asymp. Sig.	0.965	0.680

The majority of patients in this study had stage T2, namely: T2a, the tumor size > 7cm and ≤ 10cm which is only in the kidney and pT2b, the tumor size > 10cm which is only in the kidney, 26% or 50% respectively. The results of this study are in accordance with previous studies, which obtained the most suffering from stage T2³¹. Another study obtained different results, stating that most patients were at stage T3 and T4 because most were asymptomatic, making it difficult to detect. These results will affect the determination of patient management and patient survival³².

Other factor that greatly influences the patient's prognosis is the histological type. Different histological types in RCC can result in different survival. Different histological subtypes have cytogenetic and molecular differences and they also determine differences in stage and grade³³. Stage and grade, together with age and year at diagnosis, are the most important prognostic factors for survival in RCC patients. In ccRCC, there is a strong relationship between grade, tumor size or stage, but stage is by far the strongest prognostic factor^{33,34}.

As previously noted, ccRCC is the most lethal and highly aggressive malignancy of the urinary tract and is often resistant to chemotherapy and radiotherapy³⁵. In the last few decades, the management of ccRCC has experienced tremendous development. The existence of various new therapeutic methods will give hope to

ccRCC patients. One of the therapies that has been developed is targeted therapy, for example inhibition of the vascular endothelial growth factor (VEGF) pathway and mammalian target of rapamycin (mTOR) inhibitors. Several other new therapies are immunotherapy/immune checkpoint inhibitors (ICI), which consist of anti-programmed death 1 (PD-1), anti-programmed death ligand 1 (PD-L1), and anti-cytotoxic T lymphocytes antigen 4 (CTLA-4)¹¹.

One of the body's ways to fight tumor cells is by activating the immune system, both innate and adaptive immunity. Innate immunity is in the form of dendritic cells which will capture antigens released by tumor cells and then presented to MHC I and II contained in T cells³⁶⁻³⁸. This process will activate effector T cells which are components of adaptive immunity. These activated T cells will enter the circulation through the blood vessels and will then arrive at the site of the tumor cells. T cells will recognize and bind to these tumor cells and kill them. This process cannot take place effectively in cancer patients so they cannot detect tumor cell antigens. The antigen will become self-antigen so that it will activate the response from regulatory T cells. Activation of regulatory T cells and other factors in the tumor microenvironment will prevent T cells from eliminating tumor cells^{11,39-43}.

The inhibition of checkpoint molecule programmed death-1 (PD-1) plays an important role in maintaining homeostasis of the body's immune response to tumor cells by binding to its ligands, namely PD-L1 and PD-L2. PD-1 is expressed on the surface of T cells, including regulatory T cells (Treg), B cells, monocytes, dendritic cells and natural killer cells (NK cells). The bond between PD-1 and PD-L1 expressed by tumor cells and inflammatory cells will act as a negative regulator of the elimination process of tumor cells⁴⁴. This process will eventually lead to exhaustion of T cells¹⁰. Blockade of this process will restore the function of T cells in eliminating tumor cells⁴⁴.

The expression of PD-1 and PD-L1 is associated with clinicopathological features in ccRCC, namely large tumor size, high nuclear grade, presence of tumor necrosis and presence of sarcomatoid differentiation. PD-1 expression can be used as a biomarker in detecting poor outcomes in metastatic ccRCC patients receiving targeted therapy^{35,45}.

High PD-L1 expression has been confirmed as a poor prognostic factor but currently its use as a predictive marker is still controversial for various reasons, including: (1) there are several types of antibodies against PD-L1 available, for example 22C3, 28-8, 73-10, and SP142, (2) studies that have compared PD-L1 22C3

and 28-8 found a fairly high match between the two antibodies^{46,47}, and (3) PDL-1 SP142 antibody has a lower sensitivity when compared to the two^{11,46}.

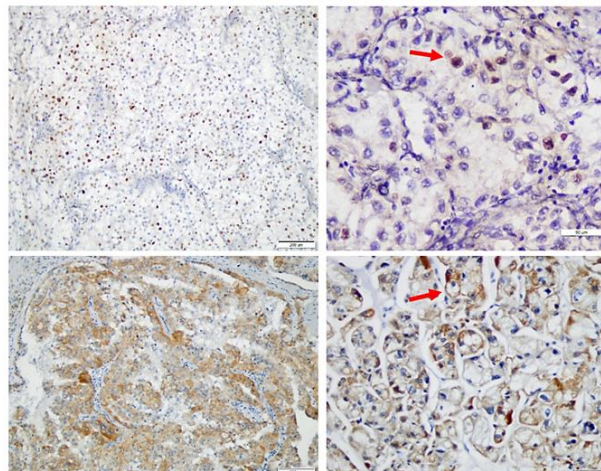


Figure 1: Staining of Ki-67 and PD-L1 on CCRCC. Ki-67 is positive in the nuclei, while PD-L1 is positive in the membrane cell and cytoplasm of tumor cells.

This study showed no correlation between PD-L1 and stage indicating that in ccRCC, tumor cells are strongly influenced by time and location so that it can affect the interpretation of the results. Clonal differences and tumor microenvironment can also influence PD-L1 expression in tumors. Non-uniform PD-L1 expression, a better understanding of the tumor microenvironment and the use of other biomarkers such as gene markers and composite indices are needed to better identify patients who would benefit from PD-1/PD-L1 checkpoint blockade therapy³⁰.

Statistical test results in Table 2 showed that there was no relationship between the expression of PD-L1 and Ki-67 in various T-stage clear cell renal cell carcinomas ($p=0.965$ and $p=0.680$), indicating that in patients with clear cell renal cell carcinoma, the expression PD-L1 in tumor cells is not related to tumor size or clinical stage, and Ki-67 can only be used to determine nuclear grade, not stage.

This is different from a study which states that RCC patients with high Ki-67 expression tend to have higher TNM stages, pathological T-stages, positive metastases, and higher nuclear grades. Mechanism of Ki-67 which is a well-known biomarker of cell proliferation in many tumors plays an important role in mitosis by regulating chromatin recombination, so that Ki-67 is considered as a molecular marker of aggressive behavior and response to therapy for the assessment of survival outcomes in several cancers including RCC, as well as explaining as a prognostic factor that influences the clinicopathology of RCC patients⁴⁸.

Meta-analysis studies proved that PD-L1 expression did not represent an accurate biomarker for selecting treatment for ccRCC patients because the PD-L1 negative group and the PD-L1 positive group both benefited from immunotherapy⁴⁹.

Another factor to consider is that PDL1 expression on TIL, but not on tumor cells, was shown to be significantly associated in more aggressive and higher stage RCC patients. These data indicate that TIL PD-L1 expression in RCC patients contributes to cancer aggressiveness⁵⁰.

PD-L1 can be considered as an important biomarker with a poorer prognosis and aggressive clinicopathological findings in patients with RCC. PD-L1 expression has a significant relationship with nuclear level and tumor necrosis (p = 0.025 and 0.010, respectively). However, PD-L1 expression does not correlate with tumor size, lymphovascular invasion, and sarcomatoid differentiation⁵¹.

CONCLUSION:

This study showed no correlation between the expression of PD-L1 and Ki-67 in various T-stage clear cell renal cell carcinomas. Nonetheless PD-L1 can be considered as an important biomarker with a poorer prognosis and aggressive clinicopathological findings in patients with RCC.

ACKNOWLEDGEMENT:

This study funded by the Dean of Faculty of Medicine, and Universitas Airlangga, Surabaya, Indonesia. We thank Jalan Tengah Creative (<http://jalantengah.site>) for editing the manuscript.

REFERENCES:

- Lee BH. Commentary on: "An integrated metabolic atlas of clear cell renal cell carcinoma." Hakimi AA, Reznik E, Lee CH, Creighton CJ, Brannon AR, Luna A, Aksoy BA, Liu EM, Shen R, Lee W, Chen Y, Stirdivant SM, Russo P, Chen YB, Tickoo SK, Reuter VE, Cheng EH, Sander C, Hsieh JJ. *Urol Oncol Semin Orig Investig.* 2017;35(9):579–80. doi: 10.1016/j.urolonc.2017.07.023.
- Hsieh JJ, Purdue MP, Signoretti S, Swanton C, Albiges L, Schmidinger M, Heng DY, Larkin J, Ficarra V. Renal cell carcinoma. *Nat Rev Dis Primers.* 2017;3: 17009. doi: 10.1038/nrdp.2017.9.
- Hota BM, Naaz N, Pujitha M, Banoth SB, Basavaih PGC. RECURRENT PERI-OP HAEMATURIA IN REPEAT LOWER SEGMENT CAESAREAN SECTION: an unusual Presentation of Renal Cell Carcinoma in Pregnancy (A Case report with Literature Review). *Bali Med J.* 2015; 4(2): 44-8.
- Erdogan F, Demirel A, Polat O. Prognostic significance of morphologic parameters in renal cell carcinoma. *Int J Clin Pract.* 2004; 58(4):333-6. doi: 10.1111/j.1368-5031.2004.00008.x.
- Taneja K, Williamson SR. Updates in Pathologic Staging and Histologic Grading of Renal Cell Carcinoma. *Surg Pathol Clin.* 2018; 11(4): 797-812. doi: 10.1016/j.path.2018.07.004.
- Abouassaly R, Campbell SC. Kidney cancer. *Geriatric Urology.* 2013. 309–323.

- Tatli Dogan H, Kiran M, Bilgin B, Kiliçarslan A, Sendur MAN, Yalçın B, Ardiçoğlu A, Atmaca AF, Gumuskaya B. Prognostic significance of the programmed death ligand 1 expression in clear cell renal cell carcinoma and correlation with the tumor microenvironment and hypoxia-inducible factor expression. *Diagn Pathol.* 2018; 13(1): 60. doi: 10.1186/s13000-018-0742-8.
- Carlsson J, Sundqvist P, Kosuta V, Fält A, Giunchi F, Fiorentino M, Davidsson S. PD-L1 Expression is Associated With Poor Prognosis in Renal Cell Carcinoma. *Appl Immunohistochem Mol Morphol.* 2020; 28(3): 213-220. doi: 10.1097/PAL.0000000000000766.
- Fatimah S, Rahaju AS, Rahniayu A. Role of Claudin-4 and Matrix Metalloproteinase-2 in Tumor Invasion of Colorectal Adenocarcinoma. *Research Journal of Pharmacy and Technology.* 2021; 14(9): 4795-0. doi: 10.52711/0974-360X.2021.00834.
- Grimm MO, Leucht K, Grünwald V, Foller S. New First Line Treatment Options of Clear Cell Renal Cell Cancer Patients with PD-1 or PD-L1 Immune-Checkpoint Inhibitor-Based Combination Therapies. *J Clin Med.* 2020; 9(2): 565. doi: 10.3390/jcm9020565.
- Kammerer-Jacquet SF, Deleuze A, Saout J, Mathieu R, Laguerre B, Verhoest G, Dugay F, Belaud-Rotureau MA, Bensalah K, Rioux-Leclercq N. Targeting the PD-1/PD-L1 Pathway in Renal Cell Carcinoma. *Int J Mol Sci.* 2019; 20(7): 1692. doi: 10.3390/ijms20071692.
- Ruf M, Moch H, Schraml P. PD-L1 expression is regulated by hypoxia inducible factor in clear cell renal cell carcinoma. *Int J Cancer.* 2016; 139(2): 396-403. doi: 10.1002/ijc.30077.
- Deepak H B, Sabina Evan Prince. A Systematic Review on the Role of PD-1 and its Ligands in Autoimmunity. *Research J. Pharm. and Tech.* 2017; 10(8): 2771-2776. doi: 10.5958/0974-360X.2017.00491.7.
- Zhu Q, Cai MY, Weng DS, Zhao JJ, Pan QZ, Wang QJ, Tang Y, He J, Li M, Xia JC. PD-L1 expression patterns in tumour cells and their association with CD8⁺ tumour infiltrating lymphocytes in clear cell renal cell carcinoma. *J Cancer.* 2019; 10(5): 1154-1161. doi: 10.7150/jca.29052.
- Menon SS, Guruvayoorappan C, Sakthivel KM, Rasmi RR. Ki-67 protein as a tumour proliferation marker. *Clin Chim Acta.* 2019; 491: 39-45. doi: 10.1016/j.cca.2019.01.011.
- Murti K, Warli SM, Laksmi LI. Relations between KI-67 immunohistochemistry expression with histopathology grading and prostate-specific antigen (PSA) values in adenocarcinoma prostate at Dr H. Adam Malik Hospital, Medan Indonesia. *Bali Med J.* 2017; 6(2): 289-93.
- Xie Y, Chen L, Ma X, Li H, Gu L, Gao Y, Fan Y, Zhang Y, Zhang X. Prognostic and clinicopathological role of high Ki-67 expression in patients with renal cell carcinoma: a systematic review and meta-analysis. *Sci Rep.* 2017; 7: 44281. doi: 10.1038/srep44281.
- Dewi IGASM, Susraini AAAN, Ekawati NP. HER2/neu and Ki-67 as prognostic factors in serous type ovarian carcinoma. *Bali Med J.* 2020; 9(2): 567-71.
- Miranti IP, Istiadi H, Larasati PAA, Wijaya I, Puspasari D, Karlowee V. Prostate acinar adenocarcinoma: a comparative study of Her-2 and Ki-67 expression on Gleason patterns. *Bali Med J.* 2021; 10(2): 677-82.
- Mahasin SZ, Aloudah N, Al-Surimi K, Alkhateeb SS. Epidemiology profile of renal cell carcinoma: A 10-year patients' experience at King Abdulaziz Medical City, National Guard Health Affairs, Saudi Arabia. *Urol Ann.* 2018; 10(1): 59-64. doi: 10.4103/UA.UA_102_17.
- Padala SA, Barsouk A, Thandra KC, Saginala K, Mohammed A, Vakiti A, Rawla P, Barsouk A. Epidemiology of Renal Cell Carcinoma. *World J Oncol.* 2020; 11(3): 79-87. doi: 10.14740/wjon1279.
- Ghartimagar D, Shrestha MK, Ghosh A, Ruwanpathirana RE, Regmi S. Renal cell carcinoma with widespread metastasis in 19 years old young male - A rare case report. *Int J Surg Case Rep.* 2021; 86: 106345. doi: 10.1016/j.ijscr.2021.106345.
- Li X, Xu Z, Xu T, Qi F, Song N. Basic Characteristics and

- Survival Outcomes of Asian-American Patients with Clear Cell Renal Cell Carcinoma and Comparisons with White Patients: A Population-Based Analysis. *Int J Gen Med.* 2021; 14: 7869-7883. doi: 10.2147/IJGM.S340284.
24. Globocan. Globocan 2020: New Global Cancer Data. 2020;1–2.
 25. Bahadoram S, Davoodi M, Hassanzadeh S, Bahadoram M, Barahman M, Mafakher L. Renal cell carcinoma: an overview of the epidemiology, diagnosis, and treatment. *G Ital Nefrol.* 2022; 39(3): 2022-vol3.ISSN 1724-5990.
 26. Res M, Ruts C, Hospital CR, Sciences M, Committee IE, Crh-smims S. Prevalence of. 2018;517–20.
 27. Delahunt B, Eble JN, Egevad L, Samaratunga H. Grading of renal cell carcinoma. *Histopathology.* 2019; 74(1): 4-17. doi: 10.1111/his.13735.
 28. Delahunt B, Chevillie JC, Martignoni G, Humphrey PA, Magi-Galluzzi C, McKenney J, Egevad L, Algaba F, Moch H, Grignon DJ, Montironi R, Srigley JR; Members of the ISUP Renal Tumor Panel. The International Society of Urological Pathology (ISUP) grading system for renal cell carcinoma and other prognostic parameters. *Am J Surg Pathol.* 2013; 37(10): 1490-504. doi: 10.1097/PAS.0b013e318299f0fb.
 29. Ferdous AJ, Hamzah SK. SOX17 and RASSAF1A Promoters Methylation in Circulation Tumor Cell and Cell Free DNA Isolated from Plasma in Breast Cancer Iraqi Women Patients. *Research J. Pharm. and Tech* 2018; 11(5): 2000-2005. doi: 10.5958/0974-360X.2018.00372.4.
 30. Wang X, Teng F, Kong L, Yu J. PD-L1 Expression in Human Cancers and Its Association With Clinical Outcomes. *Onco Targets Ther.* 2016; 9: 5023-39. doi: 10.2147/OTT.S105862.
 31. Thaib PKP, Rahaju AS. Clinicopathological Profile of Clear Cell Renal Cell Carcinoma. *Int J Heal Med Sci.* 2022;5(1):91–100. doi:10.21744/ijhms.v5n1.1846.
 32. Tiwari P, Kumar L, Singh G, Seth A, Thulkar S. Renal cell cancer: Clinicopathological Profile and Survival Outcomes. *Indian J Med Paediatr Oncol.* 2018;39(1):23–7. doi: 10.4103/ijmpo.ijmpo_126_16.
 33. Gudbjartsson T, Hardarson S, Petursdottir V, Thoroddsen A, Magnusson J, Einarsson GV. Histological subtyping and nuclear grading of renal cell carcinoma and their implications for survival: a retrospective nation-wide study of 629 patients. *Eur Urol.* 2005; 48(4): 593-600. doi: 10.1016/j.eururo.2005.04.016.
 34. Thaib PKP, Rahaju AS, Kusumastuti EH. Correlation between CXCR4 and MMP-2 Expression with T Stage in Clear Cell Renal Cell Carcinoma. *Research Journal of Pharmacy and Technology.* 2023; 16(2):821-9. doi: 10.52711/0974-360X.2023.00140
 35. Larrinaga G, Solano-Iturri JD, Errarte P, Unda M, Loizaga-Iriarte A, Pérez-Fernández A, Echevarría E, Asumendi A, Manini C, Angulo JC, López JI. Soluble PD-L1 Is an Independent Prognostic Factor in Clear Cell Renal Cell Carcinoma. *Cancers (Basel).* 2021; 13(4): 667. doi: 10.3390/cancers13040667.
 36. Vijayabaskaran M, Babu G, Venkateswaramurthy N, Sivakumar P, Perumal P, Sivakumar T, Sambathkumar R, Jayakar B. Antitumor Activity and Antioxidant Role of Ethanolic Extract of *Pseudarthria viscida* Linn against Ehrlich Ascites Carcinoma. *Asian J. Research Chem.* 2011; 4(1): 110-113.
 37. El-Sharkawy K, El-Brrati MMA, Ghardaly IA, Ali M. Design and synthesis of thiazol derivatives with biological evaluations as antitumor agents. *Research J. Pharm. and Tech.* 2015; 8(5): 520-528. doi: 10.5958/0974-360X.2015.00087.6.
 38. Noviyani R, Suwiyoga K, Lesmana I, Niruri R, Tunas K, Budiana and ING. Differences Of Tumor Masses And Hemoglobin Levels In Cervical Cancer Squamous Cell Type Patients Treated With Combination Of Paclitaxel And Carboplatin Chemotherapy. *Bali Med J.* 2014; 3(1): 15-7.
 39. Fadholly A, Ansori ANM, Utomo B. Anticancer Effect of Naringin on Human Colon Cancer (WiDr Cells): In Vitro Study. *Research Journal of Pharmacy and Technology.* 2022; 15(2): 885-888. DOI: 10.52711/0974-360X.2022.00148.
 40. Avinash BT, Pawan NK, Priyanka SC, Nareshkumar RJ. Nanotechnology: The Future of Cancer. *Asian J. Pharm. Tech.* 2019; 9(1): 40-48. doi: 10.5958/2231-5713.2019.00008.4.
 41. Raj KP, Kavita RL. Anticancer Potential of Coumarin derivatives: A Review. *Asian Journal of Pharmacy and Technology.* 2022; 12(4): 391-0. doi: 10.52711/2231-5713.2022.00060.
 42. Pujitha S, Jaswanth A, Ganesh A, Begum I, Jahan N. Evaluation of Anticancer activity of *Maytenus emarginata* on Ehrlich's Ascites Carcinoma treated mice. *Asian J. Res. Pharm. Sci.* 2018; 8(3): 133-136. doi: 10.5958/2231-5659.2018.00023.1.
 43. Kumar S, Koul S, Meena AK, Saxena AK, Suri OP, Dhar KL. Synthesis and Antitumor Activity of Combretastatin Analogues. *Asian J. Research Chem.* 2011; 4(6): 902-904.
 44. Bailly C, Thuru X, Quesnel B. Soluble Programmed Death Ligand-1 (sPD-L1): A Pool of Circulating Proteins Implicated in Health and Diseases. *Cancers (Basel).* 2021; 13(12): 3034. doi: 10.3390/cancers13123034.
 45. Leite KR, Reis ST, Junior JP, Zerati M, Gomes Dde O, Camara-Lopes LH, Srougi M. PD-L1 expression in renal cell carcinoma clear cell type is related to unfavorable prognosis. *DiagnPathol.* 2015; 10: 189. doi: 10.1186/s13000-015-0414-x.
 46. Tsao MS, Kerr KM, Kockx M, Beasley MB, Borczuk AC, Botling J, Bubendorf L, Chirieac L, Chen G, Chou TY, Chung JH, Dacic S, Lantuejoul S, Mino-Kenudson M, Moreira AL, Nicholson AG, Noguchi M, Pelosi G, Poleri C, Russell PA, Sauter J, Thunnissen E, Wistuba I, Yu H, Wynes MW, Pintilie M, Yatabe Y, Hirsch FR. PD-L1 Immunohistochemistry Comparability Study in Real-Life Clinical Samples: Results of Blueprint Phase 2 Project. *J Thorac Oncol.* 2018; 13(9): 1302-1311. doi: 10.1016/j.jtho.2018.05.013.
 47. Krigsfeld GS, Prince EA, Pratt J, Chizhevsky V, William Ragheb J, Novotny J Jr, Huron D. Analysis of real-world PD-L1 IHC 28-8 and 22C3 pharmDx assay utilisation, turnaround times and analytical concordance across multiple tumour types. *J Clin Pathol.* 2020; 73(10): 656-664. doi: 10.1136/jclinpath-2020-206466.
 48. Xie Y, Chen L, Ma X, Li H, Gu L, Gao Y, Fan Y, Zhang Y, Zhang X. Prognostic and clinicopathological role of high Ki-67 expression in patients with renal cell carcinoma: a systematic review and meta-analysis. *Sci Rep.* 2017 Mar 13; 7: 44281. doi: 10.1038/srep44281.
 49. Carretero-González A, Lora D, Martín Sobrino I, Sáez Sanz I, Bourlon MT, AnidoHerranz U, Martínez Chanzá N, Castellano D, de Velasco G. The Value of PD-L1 Expression as Predictive Biomarker in Metastatic Renal Cell Carcinoma Patients: A Meta-Analysis of Randomized Clinical Trials. *Cancers (Basel).* 2020; 12(7): 1945. doi: 10.3390/cancers12071945.
 50. Elkhodary HS, Nasr KE, Ahmed SH, Shakweer MM, Ezz-eldin MMA. Clinicopathological Correlation And Prognostic Value of PD-L1 Expression in Renal Cell Carcinoma. *ImmunopatholPersa.* 2022; 8(2): e30329. doi: 10.34172/ipp.2022.30329.
 51. Tabriz HM, Nazar E, Akhlaghi N, Javadi AE. Expression of Programmed Death-1 Ligand in Renal Cell Carcinoma and Its Relationship with Pathologic Findings and Disease-Free Survival. *Nephro-Urol Mon.* 2022;14(4):e127476. doi: 10.5812/numonthly-127476.

Source details

Research Journal of Pharmacy and Technology

Scopus coverage years: 1997, 2005, from 2011 to Present

Publisher: A and V Publication

ISSN: 0974-3618 E-ISSN: 0974-360X

Subject area: Pharmacology, Toxicology and Pharmaceutics: Pharmacology, Toxicology and Pharmaceutics (miscellaneous)

Medicine: Pharmacology (medical)

Source type: Journal

CiteScore 2022

1.3



SJR 2022

0.267



SNIP 2022

0.680



[View all documents >](#)

[Set document alert](#)

[Save to source list](#)

[CiteScore](#) [CiteScore rank & trend](#) [Scopus content coverage](#)

Improved CiteScore methodology

CiteScore 2022 counts the citations received in 2019-2022 to articles, reviews, conference papers, book chapters and data papers published in 2019-2022, and divides this by the number of publications published in 2019-2022. [Learn more >](#)

CiteScore 2022

$$1.3 = \frac{4,962 \text{ Citations 2019 - 2022}}{3,848 \text{ Documents 2019 - 2022}}$$

Calculated on 05 May, 2023

CiteScoreTracker 2023

$$1.4 = \frac{5,685 \text{ Citations to date}}{4,021 \text{ Documents to date}}$$

Last updated on 05 April, 2024 • Updated monthly

CiteScore rank 2022

Category	Rank	Percentile
Pharmacology, Toxicology and Pharmaceutics	#17/32	48th
Pharmacology, Toxicology and Pharmaceutics (miscellaneous)		
Medicine	#188/260	27th

[View CiteScore methodology >](#) [CiteScore FAQ >](#) [Add CiteScore to your site](#)

Research Journal of Pharmacy and Technology

COUNTRY

India



Universities and research institutions in India

SUBJECT AREA AND CATEGORY

Medicine
Pharmacology (medical)
Pharmacology, Toxicology and Pharmaceutics
Pharmacology, Toxicology and Pharmaceutics (miscellaneous)

PUBLISHER

A and V Publication

H-INDEX

47

PUBLICATION TYPE

Journals

ISSN

0974360X, 09743618

COVERAGE

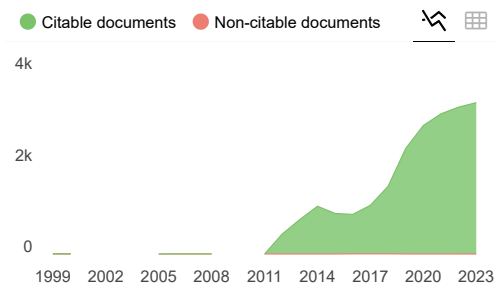
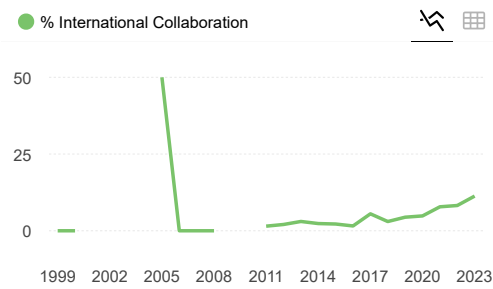
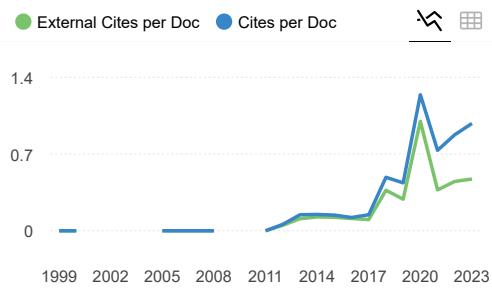
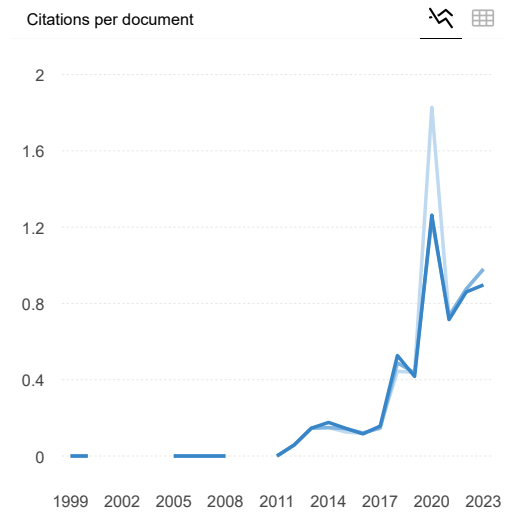
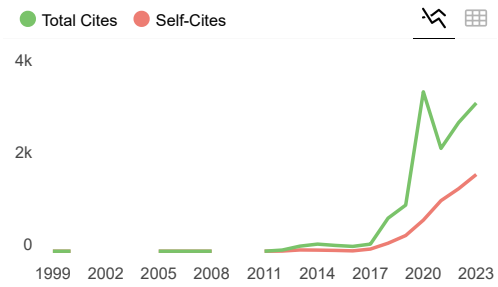
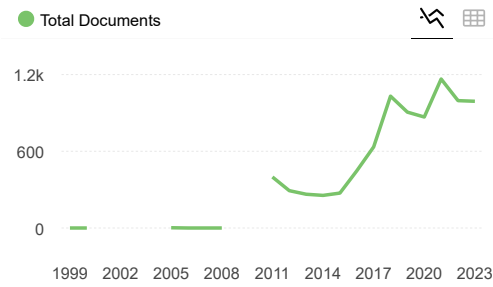
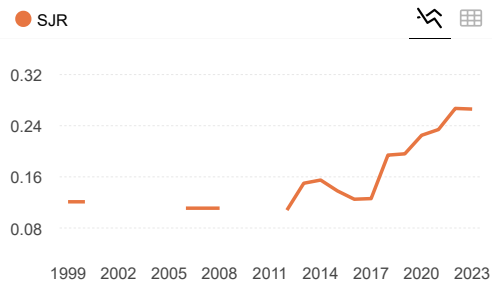
1997, 2005, 2011-2021

INFORMATION

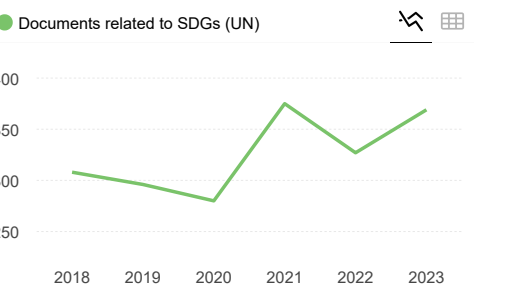
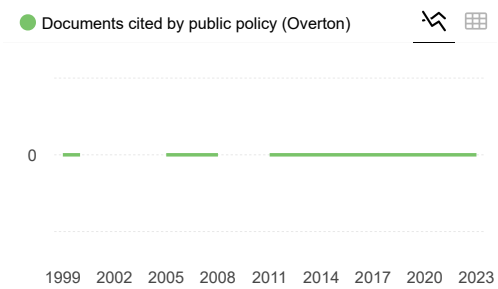
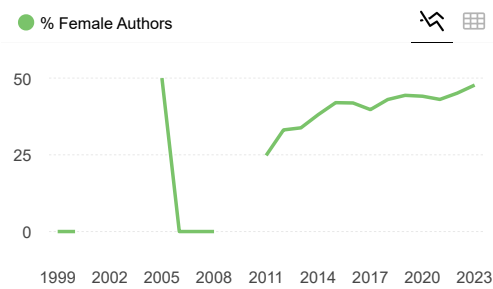
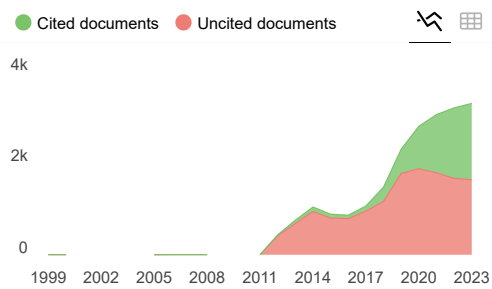
[Homepage](#)
[How to publish in this journal](#)
editor.rjpt@gmail.com

SCOPE

Research Journal of Pharmacy and Technology (RJPT) is an international, peer-reviewed, multidisciplinary journal, devoted to pharmaceutical sciences. The aim of RJPT is to increase the impact of pharmaceutical research both in academia and industry, with strong emphasis on quality and originality. RJPT publishes Original Research Articles, Short Communications, Review Articles in all areas of pharmaceutical sciences from the discovery of a drug up to clinical evaluation. Topics covered are: Pharmaceutics and Pharmacokinetics; Pharmaceutical chemistry including medicinal and analytical chemistry; Pharmacognosy including herbal products standardization and Phytochemistry; Pharmacology: Allied sciences including drug regulatory affairs, Pharmaceutical Marketing, Pharmaceutical Microbiology, Pharmaceutical biochemistry, Pharmaceutical Education and Hospital Pharmacy.



● Cites / Doc. (4 years)
● Cites / Doc. (3 years)
● Cites / Doc. (2 years)



Research Journal of Pharmacy and Technology

Q2 Pharmacology, Toxicology and Pharmaceutics...
best quartile

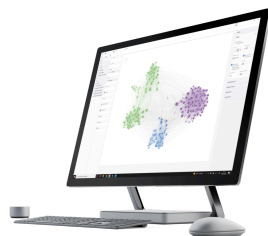
SJR 2023
0.27

powered by scimagojr.com

Show this widget in your own website

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

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



SURAT EXEMPTION
(" LETTER OF EXEMPTION ")

Ref. No. : 0483/LOE/301.4.2/VI/2021

Judul Protokol Penelitian : Korelasi Antara Ekspresi PD-L1 dan Ki-67 Pada Berbagai Stadium T Karsinoma
Sel Ginjal Tipe Clear Cell

Dokumen yang disetujui : 0735/120/4/V/2021 (versi: 4)

Tanggal terbit : 4 Juni 2021

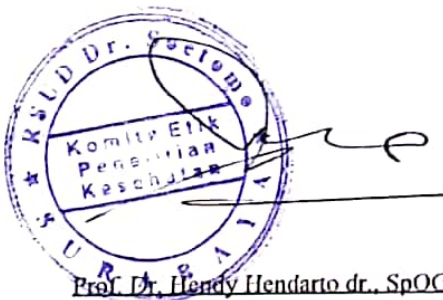
Berlaku sampai : 4 Juni 2022

Peneliti Utama : Anny Setijo Rahaju, dr., Sp.PA (K)

Peneliti Lain : 1. Alphania Rahniayu, dr., Sp.PA
2. Etty Hary Kusumastuti, dr., Sp.PA (K).FIAC
3. Priangga Adi Wiratama, dr., Sp.PA
4. Pamela Kusumadewi Putri Thaib, dr
5. Mimie Takaria, dr

Instalasi/Tempat Penelitian : RSUD Dr. Soetomo

Komite Etik Penelitian Kesehatan RSUD Dr Soetomo menyatakan bahwa dokumen diatas sesuai dengan The Office for Human Research Protections (OHRP) dibawah persyaratan the U.S. Department of Health and Human Services (HHS) Regulasi 45 CFR bagian 46 untuk **exempt review**.



Prof. Dr. Hendy Hendarto dr., SpOG(K)
Ketua Panel 1

A handwritten signature in black ink, appearing to be 'Siti Farida'.

Dra. Siti Farida SpFRS, Apt
Sekretaris Panel 1