

Dr. RAHUL SHUKLA

Assistant Professor

Department of Pharmaceutics

NIPER Raebareli

E-mail: rahul.shukla@niperraebareli.edu.in, rahulshuklapharm@gmail.com

Mob no-+91 - 9473692288



Research Interest:

Nanomedicine, Particle's engineering, nanomaterials, dendrimers for drug delivery, Polymeric nanoparticles, nanocrystals, nanogels, nano emulsions and Nano-nutraceuticals for various therapeutic applications

Academic Achievements/Awards/Experiences:

- ◆ Got D.S Kothari **Post-Doctoral Fellowship in Medical Sciences** in **UIPS, Panjab University**
- ◆ Got **CSIR-GATE** fellowship, during PhD from **CSIR-Central Drug Research Institute, Lucknow.**
- ◆ Qualified Graduate Aptitude Test in Engineering (**GATE-2006**) in Pharmaceutical Sciences, conducted by **I.I.T Kharagpur**, with an **All-India Rank-6** with **99.96** percentile.
- ◆ Qualified Graduate Aptitude Test in Engineering (**GATE-2005**) in Pharmaceutical Sciences, conducted by **I.I.T Bombay** with **94.61** Percentile in **B.Pharm 3rd year.**
- ◆ Got **DST & CICS** travel Grant to present paper at International conference on Colloids & Nanomedicine-2012 held at Amsterdam, Netherland 15-17 July 2012.
- ◆ Got **CICS travel Grant -Invited talk on "Doxycycline loaded nanoparticles of PLGA for controlled delivery and effective therapy against lymphatic filariasis"**, held at ISNSC 2016, Brisbane, **Australia.**
- ◆ worked in Formulation Research & Development in **Dr Reddy's' Lab Ltd, Hyderabad.**

Education:

COURSE	UNIVERSITY
Ph. D	J.N.U, New Delhi, CSIR-CDRI, Lucknow
M. Pharm. (Pharmaceutics)	IIT, (BHU), Varanasi
B. Pharm.	Jamia Hamdard, Delhi

Patent & Copyrights :

1. Combinatorial Formulation For Solubilization of Poorly Water Soluble Drugs & Method of Preparation Thereof. Dr. Rahul Shukla, Mr. Mayank Handa, Dr. S.J.S. Flora, Indian Patent No: 201911046999.
 2. Pharmaceutical Compositions Of Montelukast For Enhancing Oral Bioavailability And Method Of Preparation Thereof, Dr. Rahul Shukla, Mayank Handa, Nikhil Chauhan, Dr.S.J.S. Flora, Patent No: 201911042226.
 3. Novel Composition of Zein Polymeric Nanoparticles and Method Of Preparation Thereof, Dr. Rahul Shukla, Mayank Handa, Ajit Singh, Abhas Saxena, Dr. S.J.S. Flora, Indian Patent No: 202011024072.
 4. Coating Composition having Pathogen Deactivation Properties for 3-Ply Surgical-Mask and Method of Preparation Thereof,
Dr. Rahul Shukla, Dr Anoop Kumar, Dr. A K Yadav, Dr. S.J.S. Flora,
Indian Patent No: 202011033702
 5. Natural Oil Based Herbal Sanitizer Hydrogel Composition and Method of Preparation Thereof, Dr. A K Yadav, Dr. Rahul Shukla, Dr Saba Naqvi , Dr. S.J.S. Flora,
Indian Patent No: 202011033482
 6. Novel Non-Aqueous Topical Anti-Inflammatory Drug Composition and Method of Preparation Thereof
Dr Rahul Shukla, Gagandeep, Mayank Handa, Dr Awanish Mishra, Dr S.J.S. Flora,
Indian Patent No: 202111007442
 7. Novel Method of Preparation for Metallic nanoparticles and Product Thereof
Dr. Rewati R. Ujjwal, Mayank Handa, Dr Rahul Shukla, Dr S.J.S. Flora,
Indian Patent No: 202111009794
1. **Copyright granted:** PharmSolWave Technology, Dr. Rahul Shukla, Mr. Mayank Handa, Dr.S.J.S Flora , Diary No. 18327/2019-CO/L.

Publications in Refereed International Journals:

- 1) Therapeutic potential of nanoemulsions as feasible wagons for targeting Alzheimer's disease, Mayank Handa, Sanjay Tiwari, Awesh K Yadav, M. Rahman, Waleed H. Almalki, Saad Alghamdi, **Rahul Shukla***, S. Beg* , Drug Discovery Today, (Impact Factor-7.8)
- 2) Potential of nanoparticulate based delivery systems for effective management of alopecia, Priya Mishra, Mayank Handa , Vanshikha Singh, Rewati R. Ujjwal, P. Kesharwani*, **Rahul Shukla***, Colloids and Surfaces B: Biointerfaces, 2021 (Impact factor-5.26)
- 3) Nanotherapeutics approach for targeting alpha synuclein protein in Parkinson disease, Ajit Singh, S. Maharana, P. Kesharwani*, **Rahul Shukla ***, Process Biochemistry, 2021, (Impact factor-3.757)
- 4) Investigations on the role of edge activator upon structural transitions in Span vesicles, Sachin Rathod, Shristi Arya, **Rahul Shukla**, Debes Ray, Vinod K. Aswal, Pratap Bahadur, S. Tiwari , Colloids and Surfaces A: Physicochemical and Engineering Aspects, Volume 627, 20 October 2021, (Impact factor-4.539)
- 5) Quantum dot: heralding a brighter future in neurodegenerative disorders, Ajit Singh, T. Naga Mallika, B. Gorain, A. K. Yadav, S. Tiwari, S.J.S. Flora, P. Kesharwani*, **Rahul Shukla***, Journal of Drug Delivery Science and Technology, Volume 65, October 2021, (Impact factor-3.98)

- 6) Nanocarrier mediated autophagy: An emerging trend for cancer therapy, Ajit Singh, M. Handa, M. Ruwali, S.J.S Flora, P Kesharwani*,**Rahul Shukla***, Process Biochemistry, Volume 109, October 2021, Pages 198-206, (Impact factor-3.757)
- 7) Viral vectors as a promising nanotherapeutic approach against neurodegenerative disorders, Vaibhavi Srivastava, Ajit Singh, G. K Jain, F. J. Ahmad, P Kesharwani*,**Rahul Shukla***, Process Biochemistry, Volume 109, October 2021, Pages 130-142, (Impact factor-3.757)
- 8) PAMAM dendrimer as a talented multifunctional biomimetic nanocarrier for cancer diagnosis and therapy, Bhavya Surekha, Naga S. Kommana, Sunil K. Dubey, A.V. Pavan Kumar, **Rahul Shukla**, P. Kesharwani, Colloids and Surfaces B: Biointerfaces, 2021. (Impact factor-5.26)
- 9) Mobility of doxorubicin in TPGS micelles in response to sodium taurodeoxycholate incorporation: Analyses based on scattering and fluorescence studies, Jayant Sarolia, **Rahul Shukla**, Debes Ray, Vinod K. Aswal, Sharmistha D. Choudhury, Pratap Bahadur Sanjay Tiwari, Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2021 (Impact factor-4.5)
- 10) Nanotechnological approaches for targeting amyloid β aggregation with potential for Neurodegenerative disease therapy and diagnosis, **Rahul Shukla**, Ajit Singh, Mayank Handa, S.J.S. Flora, P. Kesharwani, Drug Discovery Today, 2021, (Impact factor-7.8)
- 11) Epidemiology, virology and clinical aspects of hantavirus infections: an overview, Sima Singh, Arshid Numan, D. Sharma, Rahul Shukla, Amit Alexander, Gaurav K. Jain, Farhan J. Ahmad and Prashant Kesharwani, International Journal of Environmental Health Research, 2021, (Impact factor-3.4)
- 12) Optimization of Surfactant and Co-Surfactant Aided Pine Oil Nanoemulsion by Isothermal Low-Energy Methods for Anticholinesterase Activity, Handa, M., Ujjwal, R. R., Vasdev, N., Flora, S.J.S., and Shukla, R. ACS Omega, 2021, 6, 1, 559–568, (Impact factor-3.7)
- 13) Box-Benken Design Optimized TPGS Coated Bovine Serum Albumin Nanoparticles Loaded with Anastrozole, Kumar, A., Singh, A., Flora, S.J.S., Shukla, R. Current Drug Delivery, (2021), (Impact factor-2.56)
- 14) Investigations of process parameters during dissolution studies of drug loaded 3D printed tablets, Sharma, Varun; Moinuddin, Sk.; Choudhury, Archita; Kumar, Pramod; Kala, Prateek; Sultana, Yasmin; Shukla, Rahul; Kumar, Dalip, Part H: Journal of Engineering in Medicine, 2021
- 15) Nanodiamonds: A Versatile Drug Delivery System in Recent Therapeutics Scenario, Yadav, A. K., Shukla, R., Flora, S.J.S., Critical Reviews™ in Therapeutic Drug Carrier Systems, (2020), (Impact factor-3.72)
- 16) 3D Printing Fabrication of Personalized Nanomedicine, Keerti Jain, Rahul Shukla, Awesh Yadav, Rewati Raman Ujjwal and S.J.S. Flora, Nanomaterials, 2021, (Impact factor-4.32)
- 17) Formulation and evaluation of gastro-retentive floating bilayer tablet for the treatment of hypertension, Balaji Maddiboyina, Mudavath Hanumanaik, Ramya Krishna Nakkal, Vikas Jhawat, Pinki Rawat, Aftab Alam, Ahmed I. Foudahd Majed M. Alrobaian, Rahul Shukla, Sima Singh, Prashant Kesharwani, Heliyon, Volume 6, Issue 11, November 2020
- 18) Silymarin Encapsulated Nanoliquid Crystals for Enhanced Activity against Beta Amyloid Induced Cytotoxicity, Ajit Singh, Ashish Kumar, Rahul Verma, **Rahul Shukla***, International Journal of Biological Macromolecules, Volume 149, 1198-1206, 2020, (Impact factor-6.162)
- 19) Immune checkpoint inhibitors: a promising anticancer therapy, Sima Singh, Daniel Hassan, Hibah M. Aldawsari, N. Molugulu, Rahul Shukla, Prashant Kesharwani, Drug Discovery Today, Volume 25, Issue 1, 2020, Pages 223-229, (Impact factor-7.8)

- 20) Autophagy inducing inhalable Co-crystal formulation of Niclosamide-Nicotinamide for lung cancer therapy, Eupa Ray, Kalpesh Vaghasiya, Ankur Sharma, Rahul Shukla, Anil Kumar, Rahul K Verma, AAPS PharmSciTech (2020), (I.Factor=3.24)
- 21) Role of flavonoids in neurodegenerative diseases: Limitations and future perspectives, Gagandeep Mann, Biplab Sikdar, Ashish Kumar, **Rahul Shukla**, Awanish Mishra, Current Topics in Medicinal Chemistry, 2020, (Impact factor-3.1)
- 22) Insulin mediated novel therapies for the treatment of Alzheimer's disease, S K Dubey, K.K.Lakshmi, K V Krishna, Mukta Agrawal, Gautam Singhvi, R N Saha, Swarnlata Saraf, Shailendra Saraf, Rahul Shukla, A Alexander, Life Sciences, 2020., (Impact factor-5.03)
- 23) Recent advances in self-assembled nanoparticles for drug delivery, T Varma Lanke, N. Singh, B. Gorain, H Gorain, Murtaza Tambuwala, P. Kesharwani, **Rahul Shukla***, Current Drug Delivery, 2020, (Impact factor-2.56)
- 24) Azacitidine loaded PLGA nanoparticles and its dual release mechanism, Kanchan Kashyap, Mayank Handa, Rahul Shukla*, Current Nanomedicine, 2020.
- 25) Drug delivery and targeting to the brain through nasal route: Mechanisms, Applications and Challenges, Kanchan Kashyap, **Rahul Shukla***, Current Drug Delivery, Volume 16, Number 10, 2019, 887-901, 2019, (Impact factor-2.56)
- 26) Temperature/pH-Triggered PNIPAM-Based Smart Nanogel System Loaded With Anastrozole Delivery for Application in Cancer Chemotherapy". Ajit Singh, Kalpesh Vaishagya, Rahul K. Verma, **Rahul Shukla***; AAPS PharmSciTech (2019) 20: 213. (I.Factor=3.24)
- 27) Polycaprolactone based nano-carrier for co-administration of moxifloxacin and rutin and its in-vitro evaluation for sepsis, M. Handa, A. Sharma, Rahul K. Verma, **Rahul Shukla***, Journal of Drug Delivery Science and Technology, 2019. (I.F=3.99)
- 28) Key Signaling Pathways Engaged in Cancer Management :Current Update, Sanjiv Singh and Rahul Shukla, Current Cancer Therapy Reviews, 2020, 16, 36-48.
- 29) Nanocrystals: An Overview of Fabrication, Characterization and Therapeutic Applications in Drug Delivery, Vishwas P. Pardhi, Tejesh Verma, S.J.S. Flora, H. Chandasana, **Rahul Shukla***, Current Pharmaceutical Design, Volume 24, Issue 43, 2018. (I.Factor=3.12)
- 30) Caffeic acid phenethyl ester (CAPE) reverses fibrosis caused by chronic colon inflammation in murine model of colitis., MM Tambuwala, P Kesharwani, **R Shukla**, PD Thompson, PA McCarron, Pathology-Research and Practice, Vol. 214, Issue 11, Pages 1909-1911 2018, (I. Factor: 1.5)
- 31) Quality by Design (QbD)-enabled development of aceclofenac loaded-nano structured lipid carriers (NLCs): An improved dermatokinetic profile for inflammatory disorder(s). N. K. Garg, G. Sharma, B. Singh, P. Nirbhavane, R. K. Tyagi, **Rahul Shukla**, O.P. Katare, Int. Jou. of Pharmaceutics, 517 (2017) 413–431 (I. Factor: 5.87)
- 32) Chitosan coated alginate micro particles for oral delivery of antifilarial drug and combinations for intervention in Brugia malayi induced lymphatic filariasis. **R.Shukla**, J.Gupta et al., RSC Advances 2015, 5, 69047–69056. (Impact factor 3.84)
- 33) Emerging trend in nano-engineered polyelectrolyte based surrogate carriers for delivery of bioactives. Shukla P, Gupta G, Singhodia D, **Shukla R**, et al. Expert opin Drug Deliv. 2010 Sep; 7(9):993-1011. (Impact factor 6.65)
- 34) Ciprofloxacin surf-plexes in sub-micron emulsions: A novel approach to improve payload efficiency and antimicrobial efficacy, V. Jain, D Singodia, G K. Gupta, D Garg, G.B.S Keshava, **Rahul Shukla**, P. K. Shukla and P R. Mishra, International J. of Pharmaceutics, Vol. 409 (2011) 237–244 (Impact Factor: 5.87)

- 35) Development of Nevirapine Loaded Novel Surfactant Free Polymeric Emulsion and Investigations for Its Suitability as Drug Delivery Vehicle.
D Singodia, S Kansal, A Verma, **Rahul Shukla**, P Shukla, P Dwivedi, V Kumar, P Gupta, A. K. Dwivedi, and P R. Mishra., Journal of Bionanoscience Vol.4, 66-73 (2010)
- 36) Exploiting 4-sulphate N-acetyl galactosamine decorated gelatin nanoparticles for effective targeting to professional phagocytes in vitro and in vivo.
P. Dwivedi, S. Kansal, M.Sharma, **Rahul Shukla**, A. Verma, P. Shukla, P. Tripathi, P. Gupta, D. Saini, K. Khandelwal, R. Verma, A. K. Dwivedi and P. R. Mishra
Journal of Drug Targeting, 2012 Oct 1 ,(Impact Factor 5.12)
- 37) Microparticles of Diethylcarbamazine Citrate for the Treatment of Lymphatic Filariasis. **Rahul Shukla***, J. Kumar, P. Dwivedi, P. Gatla and P.R. Mishra
Asian Journal of Chemistry; Vol. 25, (2013), 302-304.
- 38) Preparation and characterization of solid lipid nanoparticles of antimalarial drug Arteether for oral administration, P. Dwivedi, R. Khatik, K. Khandelwal, **Rahul Shukla**, S. K Paliwal, A. K Dwivedi, P R Mishra, Journal of Biomaterials and Tissue Engineering, Vol. 4, 1–5, 2014
- 39) Formulation and characterization of Amphotericin B loaded nanostructured lipid carriers using microfluidizer, P. Tripathi, A.Verma, P. Dwivedi, D. Sharma, V. Kumar, **Rahul Shukla**, V. Teja Banala, G. Pandey, S. D. Pachauri and P R Mishra, Journal of Biomaterials and Tissue Engineering 2014, Vol. 4(3), 194-197).
- 40) Development of docetaxel nanocapsules for improving in vitro cytotoxicity and cellular uptake in MCF-7 cells, S K Singh, V. T. Banala, G. K. Gupta, A. Verma, **Rahul Shukla**, V K. Pawar, P. Tripathi, P.R Mishra, Drug Development and Industrial Pharmacy 2015, ,(Impact Factor 3.22)
- 41) Poly (lactic-co-glycolic acid) (PLGA) & Poly (caprolactone) (PCL) Nanoparticles for Sustained delivery of anti-filarial drug. Full Paper in conference Proceedings. ASP-14, Indian Institute of Technology, Guwahati.
- 42) Cationic Chitosan Grafted Lipid Nanocarriers of a Chemotherapeutic Agent.
held at. Full Paper in Proceedings ASP-14, Indian Institute of Technology, Guwahati.

Books Edited:

1. **IntechOpen – Title “Role of Novel Drug Delivery Vehicles in Nanobiomedicine”, Edited by Dr Rajeev K. Tyagi, Dr Neeraj K Garg, Dr Rahul Shukla, Dr Prakash Singh Bishen**
2. **Elsevier : Nanomedical Drug Delivery for Neurodegenerative Disease, Edited by Dr A K Yadav, Dr Rahul Shukla and Dr S.J.S. Flora**
3. **Ereadon: Pharmaceutics-I, , Edited by Dr Rahul Shukla and Dr Pankaj K. Singh**

Chapters in Books Published by International Publishers :

- I. "Chitosan-Based Nanocarriers A Promising Delivery System for Bioactives" Book Chapter published by , Nano Agrochemicals & Nano PhytoChemicals.,**CRC Press, Taylor & Francis Group**
- II. "Dendrimer-based nanocarriers in lung cancer therapy" Book "Nanotechnology-based Targeted Drug Delivery Systems for Lung Cancer" Chapter Published by **Elsevier.**
- III. "Dendrimer-based nanoparticulate delivery system for cancer therapy" Book Chapter Published by **Elsevier, 2019.**
- IV. "Conclusion and future prospective of polymeric nanoparticles for cancer therapy" Book Chapter Published by **Elsevier, 2019.**
- V. "History of Flavors associated with functional foods and Nutraceuticals" : Flavor development for functional foods and nutraceuticals, Flavor development for functional foods and nutraceuticals, Book Published by **CRC Press 2019,**
- VI. "Flavors and Fragrances - Natural and Food Grade Ingredients for Nutraceuticals applications" Flavor development for functional foods and nutraceuticals,Book Published by **CRC Press 2019, taylor & francis group.**
- VII. "Natural flavors in functional food supplements" Flavor development for functional foods and nutraceuticals, Book Published by **CRC Press 2019, taylor & francis group.**
- VIII. "Introduction to Pharmaceutical Product Development" Pharmaceutical Product and Process Optimization Book Published by **Apple Academic Press 2019.**
- IX. "Recent Advances in the Development of Nanopharmaceuticals" Pharmaceutical Product and Process Optimization book Published by **Apple Academic Press 2019.**
- X. "Environmental risk factors, genetic variations and their interactions: Association with susceptibility to cancer" for book on "Environmental Microbiology and Biotechnology" to be published by **Springer Nature, Singapore.**
- XI. "Human Microbiome and Malignancy: Principles, Mechanisms and Challenges" Book Chapter for book on "Infectious Diseases and Microbes: Progress and Prospects" published by **Springer-Nature.**
- XII. "Application of membrane processing techniques in wastewater treatment for food industries", for book on Applications of Membrane Technology for Food Processing Industries" going to be Published by **CRC Press.**
- XIII. "Retention of antioxidants by using novel membrane processing technique", for book on Applications of Membrane Technology for Food Processing Industries Published by **CRC Press.**
- XIV. "Probiotic supplementation in major depressive disorders" for book on Volume 4: Successes, problems, and prospects of probiotics in neurodegenerative disorders, published by **Springer Nature.**
- XV. "Role of Probiotics in Rheumatoid Arthritis" for book on Volume 5: Probiotics in Cancers and immunology of Multivolume Book series entitled "'Probiotic Research in Therapeutics" going to be published by **Springer Nature.**
- XVI. "Dendrimer-based drug delivery systems for tuberculosis treatment" Nanotechnology Based Approaches for Tuberculosis Treatment Published by **Elsevier.**
- XVII. "Electrospun nanofibers for wound healing", in book "Theory and Applications of Nonparenteral Nanomedicines, Published by **Elsevier.**
- XVIII. "Nanomedicine in pain management", in book "Theory and Applications of Nonparenteral Nanomedicines", Published by **Elsevier.**

- XIX. “Emergence of Nanophytomedicine in Health Care Setting”, in Book Nanophytomedicine, published by **Springer Nature**.
- XX. “Nanophytomedicine Market: Global Opportunity Analysis and Industry Forecast” in Book Nanophytomedicine, published by Springer Nature.
- XXI. “Nanotechnological Advances in Direct Nose to Brain Drug Delivery for Neurodegenerative Disorders and other Neuro-ailments”, in Book on Direct Nose to Brain Drug Delivery Published by **Elsevier**.
- XXII. “Immunochemotherapy combination therapy in cancer treatment”, to be published by **Springer Nature**, Singapore.
- XXIII. “Clinical Translation Status of Nanoformulations”, to be published by **Springer Nature**, Singapore.
- XXIV. “Nanotechnology assisted medical devices in cancer treatment, to be published by **Springer Nature**, Singapore.
- XXV. "Role of nanomedicines in neglected tropical diseases", to be published by **Wiley**.
- XXVI. Oxidative Stress and Cancer: Role of the Nrf2-Antioxidant Response Element Signaling Pathway, Ruwali, M.*, Shukla, R. published by **Springer Nature**, Singapore.

Workshop & National School Participated & Distance Learning Courses.

- Participated in QIP Short term course in Department of Material Sciences, IIT BHU Faculty Development Programs on “Nanomaterials Synthesis, characterizations & Applications”, 1-6 July 2019
- The Distance Learning General course on Intellectual Property from Feb 1-April 28, 2013 conducted by WIPO Academy completed.
- Participated in Nano Mission School on “Nano Science & Nano Technology-Biological Sciences” conducted by INST, Mohali from Nov 6th-11th 2017.
- Participated in Workshop on Biorisk Management, hosted by Sandia National Lab, USA, 11th -15th Sep’2017.
- Participated in National Workshop on “Research Methodologies in Animal Sciences” Organized by Department of Zoology, Centre for Advanced Studies (UGC), Panjab University, Chandigarh from March 21st to 28th March, 2017.
- Participated in Symposium cum workshop on “Then Integration of Biological Methods in the Nano field of Chemistry” held at SAIF, Panjab University, Chandigarh, 3rd - 4th March’2017.
- Participated & Presented Paper in National School on Sustainable Polymers conducted by Dept. of Chemical Engineering, IIT, Guwahati from Jan 6-11 2014.
- Scientific and Technical Awareness Programme on Animal Experimentation, March 26-30, 2012 held at National Laboratory Animal Centre, Lucknow

Membership of Professional Bodies

- **Life Member of Association of Pharmaceutical Teachers of India (APTI) , India.**
- **Life Member of Indian Pharmacy Graduates' Association (IPGA), New Delhi, India.**
- **Life Member of Indian Red Cross Society, New Delhi.**
- **Member of Examination & Expert Committee in AKTU, Lucknow and Era University, Lucknow.**

Extra Curricular Activities

- ◆ Member of scientific, registration and reception committee of 59TH Indian Pharmaceutical Congress held at B.H.U.
- ◆ Got N.C.C 'B' Certificate.
- ◆ Participated in National Games-94, Pune.
- ◆ Life member of Youth hostels association of India.

STUDENTS SUPERVISED & ONGOING

Post Graduate level: 27

PhD :02

N- Post Doctoral Fellow:01

Place: NIPER-R, Lucknow

Date:18.08.2021

Dr Rahul Shukla