

# Rakesh Kumar Sahoo

Ph.D. Scholar, Central University of Rajasthan, Ajmer, India

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## Objective

To employ and explore my knowledge in the field of research related to pharmaceutical nanotechnology. To expertise in the nano-formulation development for the better management of different cancers like glioblastoma, lung cancer, etc.

## Educational Qualification

Year	Degree	University / Board	Result
2019-Present	Ph.D. in Pharmacy	Central University of Rajasthan, Ajmer, India	Pursuing
2017-19	M.Pharm. [Pharmaceutics]	Central University of Rajasthan, Ajmer, India	8.31 CGPA
2013-17	B.Pharm. (I.P.T., Salipur)	Biju Patnaik University of Technology, Odisha	9.18 CGPA
2011-12	12th (Salipur Jn. College, Cuttack)	Council of Higher Secondary Education, Odisha	74.50%
2009-10	10th (S.A.C.I.E., Cuttack)	Board of Secondary Education, Odisha	90.16%

## Project Works

1. **Ph.D. project** on “*Peptide Modified Dendrimer-based Drug Delivery Formulations for the Effective Management of Brain Tumor*” (**Ongoing project**). (Supervisor: **Dr. Umesh Gupta**, Central University of Rajasthan)
2. Major **M.Pharm. project** on “*PEGylated Dendrimer Mediated Delivery of Bortezomib*”. (Supervisor: **Dr. Umesh Gupta**, Central University of Rajasthan)
3. Minor **B.Pharm. project** on “*Evaluation of Antimicrobial and Analgesic Activity of Aqueous and Hydro-Alcoholic Extracts of Solanum torvum*”. (Supervisor: **Dr. H.K. Sandeep**, IPT, Salipur, Odisha)

## Achievements

1. **Best Poster Award** at 11th International Conference on Materials for Advanced Technologies (ICMAT-2023) organized by Material Research Society of Singapore (MRS-S) held during 26<sup>th</sup> to 30<sup>th</sup> June 2023 at Suntec, Singapore.
2. **International travel grant** (File No. ITS/2023/001434) by the Science and Engineering Research Board (SERB), New Delhi (GoI) to attend 11th International Conference on Materials for Advanced Technologies (ICMAT2023) held during 26<sup>th</sup> to 30<sup>th</sup> June 2023 at Suntec, Singapore.
3. **1<sup>st</sup> prize** in poster presentation at International Conference on Nanopharmaceuticals and Neurological Disorders (ICNAND2023) organized by International Brain Research Organization (IBRO) and Indira Gandhi National Tribal University (IGNTU), Amarkantak, Madhya Pradesh, India during 2<sup>nd</sup> to 4<sup>th</sup> February 2023.
4. **2<sup>nd</sup> prize** in poster presentation at National Conference on Nanomedicine for Cancer Theranostics organized by Department of Pharmaceutical Sciences, Dr. Harisingh Gour Central University, Sagar, Madhya Pradesh, India on 31<sup>st</sup> January 2023.

5. **International travel grant** (Ref. No. TG/11750/22-HRD) by the Council of Scientific and Industrial Research (CSIR), New Delhi (GoI) to attend 2022 AAPS PharmSci 360 held in Boston, MA, USA from 16th to 19th October 2022.
6. **International travel grant** (File No. ITS/2022/002328) by the Science and Engineering Research Board (SERB), New Delhi (GoI) to attend 2022 AAPS PharmSci 360 held in Boston, MA, USA from 16th to 19th October 2022.
7. Senior Research Fellowship (**SRF**)-2020 by Indian Council of Medical Research (**ICMR**), New Delhi (GoI).
8. Qualified Central University Common Entrance Test (**CUCET**)-2019, a national level test for Ph.D. admission.
9. **Gold Medal** for securing **1<sup>st</sup> Rank in M. Pharm. (Pharmaceutics)** [2017-2019] at Central University of Rajasthan, Ajmer.
10. **Graduate Pharmacy Aptitude Test (GPAT)** - 2017 conducted by All India Council for Technical Education (AICTE) securing 116 marks.
11. **1<sup>st</sup> Rank in B. Pharm.** (2013-2017) at Institute of Pharmacy & Technology under Biju Patnaik University of Technology, Odisha.

## Publications

1. Sarita Rani, **Rakesh K. Sahoo**, Ashutosh Mahale, Kanan Panchal, Akash Chaurasiya, Onkar Kulkarni, Kaushik Kuche, Sanyog Jain, Kartik T. Nakhate, Ajazuddin, and Umesh Gupta. Sialic Acid Engineered Prodrug Nanoparticles for Co-delivery of Bortezomib and Selenium in Tumor Bearing Mice. **Bioconjugate Chemistry**. 2023, doi: <https://doi.org/10.1021/acs.bioconjchem.3c00210> (**Accepted**) (**IF: 4.7**)
2. Sanya Batheja, **Rakesh K. Sahoo**, Sofiya Tarannum, Klaudi K Vaiphei, Shikha Jha, Amit Alexander, and Umesh Gupta. Hepatocellular Carcinoma: Preclinical and Clinical Applications of Nanotechnology with the Potential Role of Carbohydrate Receptors. **Biochimica et Biophysica Acta (BBA) - General Subjects**. 2023; 1867 (130443): 01-17, doi: <https://doi.org/10.1016/j.bbagen.2023.130443> (**IF: 3.0**)
3. **Rakesh K. Sahoo**, Hitesh Kumar, Vikas Jain, Sonal Sinha, Ajazuddin, and Umesh Gupta. Angiopep-2 Grafted PAMAM Dendrimers for the Targeted Delivery of Temozolomide: In-vitro and In-vivo Effects of PEGylation in the Management of Glioblastoma Multiforme. **ACS Biomaterial Science & Engineering**. 2023; 9: 4288-4301, doi: <https://doi.org/10.1021/acsbiomaterials.3c00263> (**IF: 5.8**)
4. Tanisha Gupta, **Rakesh K. Sahoo**, Himani Singh, Sumeet Katke, Akash Chaurasiya, and Umesh Gupta. Lipid Based Nanocarriers in the Treatment of Glioblastoma Multiforme (GBM): Challenges and Opportunities. **AAPS PharmSciTech**. 2023; 24(102): 01-23. doi: <https://doi.org/10.1208/s12249-023-02555-2> (**IF: 3.3**)
5. Farhan Mazahir, **Rakesh K. Sahoo**, Umesh Gupta, and Awesh K. Yadav. Chondroitin Sulfate Anchored Biodegradable Nanoparticles: Design, Synthesis, and *In-vitro* Anti-tubercular Efficacy. **Materials Today Communications**. 2023; 34(105364): 01-11. doi: <https://doi.org/10.1016/j.mtcomm.2023.105364> (**IF: 3.8**)
6. Sarita Rani, **Rakesh K. Sahoo**, Vinay Kumar, Akash Chaurasiya, Onkar Kulkarni, Ashutosh Mahale, Sumeet Katke, Kaushik Kuche, Vivek Yadav, Sanyog Jain, Kartik Nakhate, Ajazuddin, and Umesh Gupta. HPMa-PCL Polymeric Micelles in Co-delivery of Proteasome Inhibitor and Polyphenol: Exploration of Synergism or Antagonism. **Molecular Pharmaceutics**. 2023; 20(1): 524-544. doi: <https://doi.org/10.1021/acs.molpharmaceut.2c00752> (**IF: 4.9**)
7. Gunjan Jeswani, Lipika Chablani, Umesh Gupta, **Rakesh K. Sahoo**, Kartik T. Nakhate, Amit G. Taksand, and Ajazuddin. Exploration of Hemocompatibility and Intratumoral Accumulation of Paclitaxel after Loco-regional Administration of Thermoresponsive Hydrogel Composed of Poloxamer and Xanthan Gum: An Application to Dose-dense Chemotherapy. **International Journal of Biological Macromolecules**. 2023; 226: 746-759. doi: <https://doi.org/10.1016/j.ijbiomac.2022.11.285> (**IF: 8.2**)
8. **Rakesh K. Sahoo**, Tanisha Gupta, Sanya Batheja, Amit K. Goyal, and Umesh Gupta. Surface Engineered Dendrimers: A Potential Nanocarrier for the Effective Management of Glioblastoma Multiforme. **Current**

**Drug Metabolism.** 15 Aug 2022; 23(9): 708-722. doi: <http://dx.doi.org/10.2174/1389200223666220616125524> (IF: 2.3)

9. **Rakesh K. Sahoo**, Himani Singh, Kamlesh Thakur, Umesh Gupta, and Amit K. Goyal. Theranostic applications of nanomaterials in the field of cardiovascular diseases. **Current Pharmaceutical Design.** 01 Jan 2022; 22(8): 91-103. doi: <https://doi.org/10.2174/1381612827666210701154305> (IF: 3.1)
10. Gunjan Jeswani, Lipika Chablani, Umesh Gupta, **Rakesh K. Sahoo**, Kartik T. Nakhate, and Ajazuddin. Development and optimization of paclitaxel loaded Eudragit/PLGA nanoparticles by simplex lattice mixture design: Exploration of improved hemocompatibility and in vivo kinetics. **Biomedicine & Pharmacotherapy.** 13 Oct 2021; 144(112286): 01-18. doi: <https://doi.org/10.1016/j.biopha.2021.112286> (IF: 7.5)
11. Kanan Panchal, **Rakesh K. Sahoo**, Umesh Gupta, and Akash Chaurasiya. Role of Targeted Immunotherapy for Pancreatic Ductal Adenocarcinoma (PDAC) Treatment: An Overview. **International Immunopharmacology.** 12 Feb 2021; 95(107508): 01-14. doi: <https://doi.org/10.1016/j.intimp.2021.107508> (IF: 5.6)
12. Vinay Kumar, **Rakesh K. Sahoo**, Trambak Basak, Tanjina Yasmin, Umesh Gupta, and Amit K. Goyal. Diagnostic and Therapeutic Applications of Smart Nanocomposite Dendrimers. **Frontiers in Bioscience (Landmark Edition).** 01 Jan 2021; 26: 518-536. doi: <https://doi.org/10.2741/4905> (IF: 3.1)
13. **Rakesh K. Sahoo**, Avinash Gothwal, Sarita Rani, Kartik T. Nakhate, Ajazuddin, and Umesh Gupta. PEGylated Dendrimer Mediated Delivery of Bortezomib: Drug Conjugation versus Encapsulation. **International Journal of Pharmaceutics.** 30 June 2020; 584(119389): 01-13. doi: <https://doi.org/10.1016/j.ijpharm.2020.119389> (IF: 5.8)
14. Sarita Rani, **Rakesh K. Sahoo**, Kartik T. Nakhate, Ajazuddin, and Umesh Gupta. Biotinylated HPMACentered Polymeric Nanoparticles for Bortezomib Delivery. **International Journal of Pharmaceutics.** 15 April 2020; 579(119173): 01-13. doi: <https://doi.org/10.1016/j.ijpharm.2020.119173> (IF: 5.8)

## Book Chapters

1. Sanya Batheja, Remya K M, Vinay Kumar, **Rakesh K. Sahoo**, Umesh Gupta (2023), Chapter 8: Drug Delivery to Central Nervous System. In **Controlled and Novel Drug Delivery**, 2<sup>nd</sup> edition, Edited by NK Jain. **CBS Publishers & Distributors Pvt. Ltd.** 265-295 (ISBN: 978-9-35-466727-5)
2. Himani Singh, Sofiya Tarannum, **Rakesh K. Sahoo**, Vinay Kumar, and Umesh Gupta. Chapter 10: Dendritic Polymer Macromolecular Carriers for Drug Delivery. In **Smart Polymeric Nano-Constructs in Drug Delivery**, Edited by Suresh P. Vyas, Udit Agrawal, and Rajeev Sharma, **Academic Press, Elsevier Inc.** 2023, 289-328. doi: <https://doi.org/10.1016/B978-0-323-91248-8.00006-4> (ISBN: 978-0-32-391248-8)
3. **Rakesh K. Sahoo**, Vinay Kumar, Sanya Batheja, and Umesh Gupta. Chapter 4: Dendrimers in the Effective Management of Alzheimer's and Dementia. In **Nanomedicine-Based Approaches for the Treatment of Dementia**, Edited by Umesh Gupta and Prashant Kesharwani, **Academic Press, Elsevier Inc.** 2023, 71-88. doi: <https://doi.org/10.1016/B978-0-12-824331-2.00003-0> (ISBN: 978-0-12-824331-2)
4. Sarita Rani, **Rakesh K. Sahoo**, Vinay Kumar, and Umesh Gupta. Chapter 5: Targeted Nanomedicine Delivery to Human Epidermal Growth Receptor. In **Targeted Nanomedicine for Breast Cancer Therapy**, Edited by Shivani R. Paliwal and Rishi Paliwal, **Academic Press, Elsevier Inc.** 29 July 2022, 111-130, doi: <https://doi.org/10.1016/B978-0-12-824476-0.00007-3> (ISBN: 978-0-12-824476-0)
5. **Rakesh K. Sahoo**, Tanisha Gupta, Smily, Vinay Kumar, Sarita Rani, and Umesh Gupta. Chapter 1: Aetiology and Pathophysiology of Neurodegenerative Disorders. In **Nanomedical Drug Delivery for Neurodegenerative Diseases**, Edited by Awesh K. Yadav, Rahul Shukla, and S J S Flora, **Academic Press, Elsevier Inc.** 18 Mar 2022, 1-16, doi: <https://doi.org/10.1016/B978-0-323-85544-0.00006-X> (ISBN: 978-0-32-385544-0)
6. **Rakesh K. Sahoo**, Sarita Rani, Vinay Kumar, and Umesh Gupta. Chapter 17: Zinc oxide nanoparticles for bioimaging and drug delivery. In **Nanostructured Zinc Oxide: Synthesis, Properties and**

## Citations

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1. Google scholar: Citations 75, h-index 05  
([https://scholar.google.com/citations?user=Na-6\\_kkAAAAJ&hl=en](https://scholar.google.com/citations?user=Na-6_kkAAAAJ&hl=en))
2. Scopus: Citations 66, h-index 05  
(<https://www.scopus.com/authid/detail.uri?authorId=57215500199>)

## Conference/Seminar/Poster Presentation

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1. Participated in DST –STUTI training program on “*Formulation and Characterization Techniques in Drug Delivery*” organized by Department of Pharmacy, Central University of Rajasthan, Ajmer from 31<sup>st</sup> July to 6<sup>th</sup> Aug. 2023.
2. Presented poster on “Peptide Grafted PEGylated PAMAM Dendrimers for the Brain Delivery of Temozolomide in the Management of Glioblastoma Multiforme” at International Dendrimer Symposium, 11th International Conference on Materials for Advanced Technologies (ICMAT-2023) held during 26<sup>th</sup> to 30<sup>th</sup> June 2023 at Suntec, Singapore.
3. Presented poster on “Peptide Grafted PAMAM Dendrimers and PEGylation for the Brain Delivery of Temozolomide in the Management of Glioblastoma Multiforme” at International Conference on Nanopharmaceuticals and Neurological Disorders (ICNAND2023) organized by International Brain Research Organization (IBRO) and Indira Gandhi National Tribal University (IGNTU), Amarkantak, Madhya Pradesh, India during 2<sup>nd</sup> to 4<sup>th</sup> February 2023.
4. Presented poster on “LRP-1 Receptor Mediated Brain Delivery of Temozolomide: PEGylated PAMAM Dendrimers in the Management of Glioblastoma Multiforme” at National Conference on Nanomedicine for Cancer Theranostics organized by Department of Pharmaceutical Sciences, Dr. Harisingh Gour Central University, Sagar, Madhya Pradesh, India on 31<sup>st</sup> January 2023.
5. Attended International Brain Research Organization (IBRO) – APRC Associate School on Advances in Neurodegenerative Disorders and Therapeutics organized by Amity Institute of Neuropsychology and Neurosciences (AINN), Amity University, Noida, India during 27<sup>th</sup> Sept to 1<sup>st</sup> Oct 2021.
6. Presented poster on “Development and Evaluation of PEGylated Dendrimers for Improved Solubility and Anticancer Potential of Bortezomib” at International Conference on Molecular Basis of Diseases and Therapeutics (ICMBDT-2019) at Central University of Rajasthan, Ajmer during 08<sup>th</sup> to 10<sup>th</sup> March 2019.
7. Presented seminar on “Cloning and its Application in Pharmacy” organized by Institute of Pharmacy & Technology, Salipur, Odisha on 6<sup>th</sup> Aug 2016.

## Equipment Exposure

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- Perkins Elmer FT- infrared spectrophotometer (IR)
- Bruker 500MHz nuclear magnetic resonance (NMR)
- Shimadzu LC-2010C HT liquid chromatograph
- Cary series 100 double beam UV-visible spectrophotometer
- Labquip bio-safety cabinet
- Biorad automatic cell counter
- Buchi R 215 rotary evaporator
- Labconco freezezone lyophilizer
- ThermoFisher heracell 150i CO<sub>2</sub> incubator
- Olympus CKXF3 fluorescence microscope
- Gel electrophoresis
- 4°C Remi NEYA 16R centrifuge

## Personal Skills

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- Gained experience in safety and management of cell culture laboratory.
- Good practice in performing *in vitro* cancer cell-based studies, such as MTT assay, cellular uptake study, and migration assay (**U87MG** and **LN229** glioblastoma cells, **A549** lung cancer cells, **MCF-7** and **MDA-MB-231** breast cancer cells, **HepG2** hepatocarcinoma cells).
- Possess practical knowledge related to *in vivo* pharmacokinetic and organ distribution protocol on animal models.
- Good knowledge in quality by design (QbD) based formulation optimization using different design of experiment (DoE).

## Computer Efficiency

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- M.S. Office (Excel, Word, and PowerPoint)
- ChemBioDraw software
- MestReNova software
- Design Expert 12 software
- GraphPad Prism 8.0 software
- Compusyn Ver. 1.0 software
- PK Solver software

## Extra-curricular Activities

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- Good performance in college and university level badminton championship.

## Strong Attributes

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- Capable of managing the assigned task.
- Ability to work independently as well as in a team environment.
- Self-motivation, flexibility drive and a person of CAN-DO attitude.

## Personal Details

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Date of Birth:	Sept 1st, 1994
Mother's Name:	Late Mrs. Jayanti Sahoo
Father's Name:	Mr. Rama Chandra Sahoo
Nationality:	Indian
Permanent Address:	Village- Surkhadeipur, P.O.- Arakhpur, District- Jajpur (Odisha) India 754296
Category:	OBC
Marital Status:	Single
Languages Known:	English, Hindi, and Odia

## Professional Reference

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1. **Dr. Umesh Gupta**  
Assistant Professor  
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2. **Dr. Amit Alexander**  
Associate Professor



Department of Pharmaceutics  
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### **Declaration**

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I assure you that the above particulars given by me are true to the best of my knowledge and belief.

**Place: CURaj, Ajmer, IN**

**Date: 30/08/2023**

*Rakesh Kumar Sahoo*

**(Rakesh Kumar Sahoo)**