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7 Publications from the research work

- **Mehata AK**, Singh V, Vikas, Singh N, Mandal A, Dash D, Koch B, Muthu MS. Chitosan-*g*-estrone Nanoparticles of Palbociclib Vanished Hypoxic Breast Tumor after Targeted Delivery: Development and Ultrasound/Photoacoustic Imaging. ACS Appl Mater Interfaces. 2023;15(29):34343-34359.
- **Mehata AK**, Singh V, Vikas, Singh N, Srivasstava P, Koch B, Kumar M, and Muthu MS. Theranostic chitosan nanoparticles for the co-delivery of palbociclib and ultra-small magnesium nanoclusters: dual receptor targeting, optical and ultrasound/photoacoustic imaging. Nanotheranostics. 2024; 8(2): 179-201.

Other publications

- Mehata, A.K., Vikas, Viswanadh, M.K. and Muthu, M.S., 2023. Theranostics of metal– organic frameworks: image-guided nanomedicine for clinical translation. Nanomedicine, 18(8)1-4.
- Mehata, A.K., Bharti, S., Singh, P., Viswanadh, M.K., Kumari, L., Agrawal, P., Singh, S., Koch, B. and Muthu, M.S., 2019. Trastuzumab decorated TPGS-g-chitosan nanoparticles for targeted breast cancer therapy. Colloids and Surfaces B: Biointerfaces, 173, pp.366-377.
- Mehata, A.K., Gupta, N. and Muthu, M.S., 2023. Exosomes as a novel nanomedicine platform for personalized triple-negative breast cancer therapy. Nanomedicine, 18(6), 501-504.
- Mehata, A.K., Setia, A., Malik, A.K., Hassani, R., Dailah, H.G., Alhazmi, H.A., Albarraq, A.A., Mohan, S. and Muthu, M.S., 2023. Vitamin E TPGS-Based Nanomedicine, Nanotheranostics, and Targeted Drug Delivery: Past, Present, and Future. Pharmaceutics, 15(3), p.722.

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- Mehata, A.K., Dehari, D., Gupta, A., Rabin, D.C. and Miya, A., 2021. Multifunctional liquid crystal nanoparticles for cancer therapy. Current Nanomaterials, 6(1), pp.4-16.
- Mehata, A.K., Viswanadh, M.K., Priya, V., Vikas and Muthu, M.S., 2021. Harnessing immunological targets for COVID-19 immunotherapy. Future Virology, 16(9), pp.619-640.
- Mehata, A.K., Dehari, D., Mehta, A.K. and Miya, A., 2021. Boosting Innate Immunity During SARS-CoV-2 Clearance. Coronaviruses, 2(8), pp.2-3.
- Mehata, A.K., Dehari, D., Ayyannan, S.R. and Muthu, M.S., 2020. X-ray powder diffraction spectroscopy as a robust tool in early predicting bioavailability of pharmaceutical formulation containing polymorphic drug substance. Drug Delivery Letters, 10(3), pp.250-254.
- Dhamija P, Mehata AK, Setia A, Priya V, Malik AK, Bonlawar J, Verma N, Badgujar P, Randhave N, Muthu MS. Nanotheranostics: Molecular Diagnostics and Nanotherapeutic Evaluation by Photoacoustic/Ultrasound Imaging in Small Animals. Molecular Pharmaceutics. 2023.
- Vikas, Mehata AK, Viswanadh MK, Malik AK, Setia A, Kumari P, Mahto SK, Muthu MS. EGFR Targeted Redox Sensitive Chitosan Nanoparticles of Cabazitaxel: Dual-Targeted Cancer Therapy, Lung Distribution, and Targeting

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- Shukla, V.N., Mehata, A.K., Setia, A., Kumari, P., Mahto, S.K., Muthu, M.S. and Mishra, S.K., 2023. EGFR targeted albumin nanoparticles of oleanolic acid: In silico screening of nanocarrier, cytotoxicity and pharmacokinetics for lung cancer therapy. International Journal of Biological Macromolecules, 246, p.125719.
- Chauhan, M., Singh, R.P., Yadav, B., Shekhar, S., Kumar, A., Mehata, A.K., Nayak, A.K., Dutt, R., Garg, V., Kailashiya, V. and Muthu, M.S., 2023. Development and characterization of micelles for nucleolin-targeted co-delivery of docetaxel and upconversion nanoparticles for theranostic applications in brain cancer therapy. Journal of Drug Delivery Science and Technology, p.104808.
- Shukla, V.N., Mehata, A.K., Setia, A., Kumari, P., Mahto, S.K., Muthu, M.S. and Mishra, S.K., 2023. Rational design of surface engineered albumin nanoparticles of asiatic acid for EGFR targeted delivery to lung cancer: formulation development and pharmacokinetics. Colloids and Surfaces A: Physicochemical and Engineering Aspects, p.132188.
- Suseela, M.N.L., Viswanadh, M.K., Mehata, A.K., Priya, V., Setia, V.A., Malik, A.K., Gokul, P., Selvin, J. and Muthu, M.S., 2023. Advances in solid-phase extraction techniques: role of nanosorbents for the enrichment of antibiotics for analytical quantification. Journal of Chromatography A, p.463937.
- Setia, A., Mehata, A.K., Malik, A.K., Viswanadh, M.K. and Muthu, M.S., 2023. Theranostic magnetic nanoparticles: synthesis, properties, toxicity, and emerging

trends for biomedical applications. Journal of Drug Delivery Science and Technology, p.104295.

- Singh C, Mehata AK, Tiwari P, Setia A, Malik AK, Singh SK, Tilak R, Muthu MS. Design of novel bioadhesive chitosan film loaded with bimetallic gold-silver nanoparticles for antibiofilm and wound healing activity. Biomedical Materials. 2023 Feb 15;18(2):025014.
- Yadav, B., Chauhan, M., Shekhar, S., Kumar, A., Mehata, A.K., Nayak, A.K., Dutt, R., Garg, V., Kailashiya, V., Muthu, M.S. and Singh, R.P., 2023. RGD-decorated PLGA nanoparticles improved effectiveness and safety of cisplatin for lung cancer therapy. International Journal of Pharmaceutics, 633, p.122587.
- Vikas, Mehata, A.K., Suseela, M.N.L., Behera, C., Kumari, P., Mahto, S.K. and Muthu, M.S., 2022. Chitosan-alginate nanoparticles of cabazitaxel: Design, dual-receptor targeting and efficacy in lung cancer model. International Journal of Biological Macromolecules, 221, pp.874-890.
- Priya, V., Singh, S.K., Revand, R., Kumar, S., Mehata, A.K., Sushmitha, P., Mahto, S.K. and Muthu, M.S., 2022. GPIIb/IIIa receptor targeted rutin loaded liposomes for site-specific antithrombotic effect. Molecular Pharmaceutics, 20(1), pp.663-679.
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- Rout, S.K., Priya, V., Mehata, A.K. and Muthu, M.S., 2022. Abciximab coated albumin nanoparticles of rutin for improved and targeted antithrombotic effect. Journal of Drug Delivery Science and Technology, 76, p.103785.

- Priya, V., Mehata, A.K., Jain, D., Singh, S.K. and Muthu, M.S., 2022. Efficient delivery of abciximab using mesoporous silica nanoparticles: In-vitro assessment for targeted and improved antithrombotic activity. Colloids and Surfaces B: Biointerfaces, 218, p.112697.
- Rout, S.K., Priya, V., Setia, A., Mehata, A.K., Mohan, S., Albratty, M., Najmi, A., Meraya, A.M., Makeen, H.A., Tambuwala, M.M. and Muthu, M.S., 2022. Mitochondrial targeting theranostic nanomedicine and molecular biomarkers for efficient cancer diagnosis and therapy. Biomedicine & Pharmacotherapy, 153, p.113451.
- Vikas, Sahu, H.K., Mehata, A.K., Viswanadh, M.K., Priya, V. and Muthu, M.S., 2022. Dual- receptor-targeted nanomedicines: emerging trends and advances in lung cancer therapeutics. Nanomedicine, 17(19), pp.1375-1395.
- Dehari, D., Mehata, A.K., Priya, V., Parbat, D., Kumar, D., Srivastava, A.K., Singh, S. and Agrawal, A.K., 2022. Luliconazole nail lacquer for the treatment of onychomycosis: formulation, characterization and in vitro and ex vivo evaluation. AAPS PharmSciTech, 23(6), p.175.
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- Viswanadh, M.K., Mehata, A.K., Sharma, V., Priya, V., Varshney, N., Mahto, S.K. and Muthu, M.S., 2021. Bioadhesive chitosan nanoparticles: Dual targeting and pharmacokinetic aspects for advanced lung cancer treatment. Carbohydrate Polymers, 274, p.118617.

- Priya, V., Viswanadh, M.K., Mehata, A.K., Jain, D., Singh, S.K. and Muthu, M.S., 2021. Targeted nanotherapeutics in the prophylaxis and treatment of thrombosis. Nanomedicine, 16(13), pp.1153-1176.
- Narendra, Mehata, A.K., Viswanadh, M.K., Sonkar, R., Pawde, D.M., Priya, V., Singh, M., Koch, B. and S Muthu, M., 2020. Formulation and in vitro evaluation of upconversion nanoparticle-loaded liposomes for brain cancer. Therapeutic Delivery, 11(9), pp.557-571.
- Viswanadh, M.K., Vikas, Jha, A., Reddy Adena, S.K., Mehata, A.K., Priya, V., Neogi, K., Poddar, S., Mahto, S.K. and Muthu, M.S., 2020. Formulation and in vivo efficacy study of cetuximab decorated targeted bioadhesive nanomedicine for non-small-cell lung cancer therapy. Nanomedicine, 15(24), pp.2345-2367.
- Burande, A.S., Viswanadh, M.K., Jha, A., Mehata, A.K., Shaik, A., Agrawal, N., Poddar, S.,Mahto, S.K. and Muthu, M.S., 2020. EGFR targeted paclitaxel and piperine co-loaded liposomes for the treatment of triple negative breast cancer. AAPS PharmSciTech, 21, pp.1- 12.
- Jha, A., Viswanadh, M.K., Burande, A.S., Mehata, A.K., Poddar, S., Yadav, K., Mahto, S.K., Parmar, A.S. and Muthu, M.S., 2020. DNA biodots based targeted theranostic nanomedicine for the imaging and treatment of non-small cell lung cancer. International journal of biological macromolecules, 150, pp.413-425.
- Pawde, D.M., Viswanadh, M.K., Mehata, A.K., Sonkar, R., Poddar, S., Burande, A.S., Jha, A., Vajanthri, K.Y., Mahto, S.K., Dustakeer, V.A. and Muthu, M.S., 2020. Mannose receptor targeted bioadhesive chitosan nanoparticles of clofazimine for effective therapy of tuberculosis. Saudi Pharmaceutical Journal, 28(12), pp.1616-1625.

- Vikas, Viswanadh, M.K., Priya, V., Mehata, A.K. and Muthu, M.S., 2020. What are the unexplored facts about nanomicelles formed from docetaxel clinical injection?. Therapeutic Delivery, 11(1), pp.801-803.
- Viswanadh, M.K., Singh, R.P., Agrawal, P., Mehata, A.K., Pawde, D.M., Sonkar, R. and Muthu, M.S., 2018. Nanotheranostics: emerging strategies for early diagnosis and therapy of brain cancer. Nanotheranostics, 2(1), p.70.
- Agrawal, P., Singh, R.P., Kumari, L., Sharma, G., Koch, B., Rajesh, C.V., Mehata, A.K., Singh, S., Pandey, B.L. and Muthu, M.S., 2017. TPGS-chitosan cross-linked targeted nanoparticles for effective brain cancer therapy. Materials science and engineering: C, 74, pp.167-176.
- Agrawal, P., Singh, R.P., Sharma, G., Mehata, A.K., Singh, S., Rajesh, C.V., Pandey, B.L., Koch, B. and Muthu, M.S., 2017. Bioadhesive micelles of d-α-tocopherol polyethylene glycol succinate 1000: Synergism of chitosan and transferrin in targeted drug delivery. Colloids and Surfaces B: Biointerfaces, 152, pp.277-288.
- Muthu, M.S., Mehata, A.K. and Viswanadh, M.K., 2017. Upconversion nanotheranostics: emerging designs for integration of diagnosis and therapy. Nanomedicine, 12(6), pp.577-580.
- Singh C, Mehata AK, Muthu MS, Tiwari KN. Premna integrifolia: A Review on the Exploration of its Potential Pharmacological and Therapeutic Properties. Current Traditional Medicine. 2024 1;10(2):37-50.

Book chapters

- **Mehata AK,** Viswanadh, M.K., Prasanna, P., Kumar, M. and Muthu, M.S., 2023. Theranostic Applications of Upconversion Nanoparticle-Based Drug-Delivery

Systems. In Nanomaterial-Based Drug Delivery Systems: Therapeutic and Theranostic Applications (pp. 239-268). Cham: Springer International Publishing.

- **Mehata AK**, Muthu MS. Development of Supramolecules in the Field of Nanomedicines. InPharmaceutical Applications of Supramolecules 2023 Jan 16 (pp. 211-239). Cham: Springer International Publishing.
- **Mehata AK**, Dehari, D., Priya, V. and Muthu, M.S., 2023. Drug-releasing textile materials: current developments and future perspectives. In Fiber and Textile Engineering in Drug Delivery Systems (pp. 1-38). Woodhead Publishing, Elsevier.

ABHISHESH KUMAR MEHATA

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EDUCATION

Indian Institute of Technology (BHU), India	Ph. D, Pharmaceutics	*2024*
Indian Institute of Technology (BHU), India	M. Pharmacy, Pharmaceutical Eng. & Tech.	*2017*
Acharya BM Reddy College of Pharmacy, India	B. Pharmacy	*2015*

RESEARCH EXPERIENCE

Ph.D. Project: Targeted nanomedicine and nanotheranostics for breast cancer imaging and therapy *2024*
Mentor: Dr. M.S. Muthu, Department of Pharmaceutics, IIT (BHU) Varanasi

- Preconjugation of polymeric nanocarrier with targeting moiety and characterization by FTIR, NMR, MS/MS and XPS
- Development imaging probe co-loaded NPs and their characterization, *in-vitro* and *in-vivo* anticancer evaluation
- Ultrasound/photoacoustic imaging and *in-vivo* live imaging of breast tumour bearing rat.

M. Pharm Dissertation: TPGS-g-Chitosan nanoparticle for targeted breast cancer therapy *2017*
Mentor: Dr. M.S. Muthu, Department of Pharmaceutics, IIT (BHU) Varanasi

Graduation research: Modified Released Tablets: An Overview *2015*
Mentor: Prof. Divakar Goli, Acharya BM Reddy college of pharmacy, Bangalore

INDUSTRIAL EXPERINCE

Sun Pharmaceutical Industries Ltd, Delhi, India *2018-2019*
Research scientist in formulation R&D

- Product development research
- Oral solid dosage formulation and topical formulation
- Quality documentation

Apotex Research Pvt. Ltd., Bengaluru, India *2017-2018*
Research Trainee in analytical R&D

- Analytical method development of pharmaceutical product
- Performing dissolution, assay, degradation production quantification by using HPLC, UV

GRADUATE & UNDERGRADUATE RESEARCH MENTORING

2021-2022
IIT (BHU). Mentored M. Pharm. thesis of S. K. Rout (Published in J Drug Deliv Sci Technol.).
IIT (BHU). Mentored M. Pharm. thesis of P. Dhamija (Published in Mol. pharmaceutics.) *2022-2023*
IIT (BHU). Mentored M. Pharma. thesis of J. Bolunwar (Nanotheranostics) *2022-2023*

SKILLS

Technical Skills

- Nanoformulations development
- Targeted drug delivery
- *In-vitro* characterization
- PK-PD studies
- Animal handling
- Histopathology
- Cell line studies

Software Skills

- Design expert
- Winolin
- PK-solver, IC-50
- Endnote
- Image J
- M3Vision (IVIS)
- MestReNova(NMR)
- Vivo Lab

Personal Skills

- Teamwork
- Problem solving
- Mentorship
- Work ethics
- Reliability
- Project planning

RECENT PUBLICATIONS

- Mehata, A.K., Singh, V., Vikas, Singh, N., Mandal, A., Dash, D., Koch, B. and Muthu, M.S., 2023. Chitosan-g-estrone Nanoparticles of Palbociclib Vanished Hypoxic Breast Tumor after Targeted Delivery: Development and Ultrasound/Photoacoustic Imaging. **ACS Applied Materials & Interfaces**, 15(29), 34343-34359 **(IF 9.5)**
- Mehata AK, Singh V, Vikas, Singh N, Srivasstava P, Koch B, Kumar M, and Muthu MS. Theranostic chitosan nanoparticles for the co-delivery of palbociclib and ultra-small magnesium nanoclusters: dual receptor targeting, optical and ultrasound/photoacoustic imaging. **Nanotheranostics**. 2024; 8(2): 179-201(**IF 4.8**)
- Vikas, Mehata, A. K., Viswanadh, M. K., Malik, A. K., Setia, A., Kumari, P. Muthu, M. S. (2023). EGFR Targeted Redox Sensitive Chitosan Nanoparticles of Cabazitaxel: Dual-Targeted Cancer Therapy, Lung Distribution, and Targeting Studies by Photoacoustic and Optical Imaging. **Biomacromolecules**. 24, 11, 4989–5003 **(IF 6.092)**
- In more than **60 peer review publications** and **5 book chapters**.

PRESENTATION AND TRAININGS

• SERB SSR, IIT (BHU), India.	Exploring New Avenues and Innovations in Drug Discovery	*2023*
• DST STUTI, SATHI-BHU, India.	Hands on training program on ultrasound and photoacoustic imaging	*2022*
• NIPER-DRIL Hyderabad, India.	Industry Oriented Training on cell culture and animal handlings	*2019*
• 67th IPC, Mysuru, India.	Bioadhesive micelles of chitosan conjugated D-α-tocopherol polyethylene glycol succinate 1000	*2017*
• IIT BHU Institutes Day, India.	Vitamin E TPGS conjugated carbon nanotubes improved efficacy of docetaxel with safety for lung cancer treatment	*2016*
• 5th DDNPTM, Niper Mohali, India.	Quality control standardization and antimicrobial evaluation of Heterophragma adenophyllum	*2016*
• IIT BHU, Varanasi, India.	Formulation and evaluation of hydrogel containing SLN loaded with Neem leaves extract for cosmetic Application	*2015*

ACCOMPLISHMENTS AND GRANTS

- Ministry of human resource development fellowship (INR 35,000/month for 5 yrs.) *2019-present*
- Ministry of human resource development research support grant (INR 18,000/yr. for 5 yrs.) *2019-2023*
- University grants commission fellowship (INR 12,500/month for 2 yrs.) *2015-2017*
- University Grants commission research support grant (INR 18,000/yr. for 2 yrs.) *2015-2017*
- Qualified GPAT with percentile of 94.5 2015
- University Rank holder from RGUHS, Bangalore *2015*
- B. Pharmacy class topper award from ABMRCP *2015*
- A certificate of appreciation from Indian Pharmaceutical Association *2014*

EXTRACURRICULAR ACTIVITIES

- Volunteered at the 63rd and 64th IPC (2011-2012)
- Experienced in Lab stock management.
- Mentor UG/PG students