

CURRICULUM VITAE

Abhisheak Sharma, B.Pharm., M.Pharm., Ph.D.

Assistant Professor, Department of Pharmaceutics

Co-Director, UF-Translational Drug Development (TDD) Core

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Google Scholar: <https://scholar.google.com/citations?user=F6O-KW4AAAAJ&hl=en>

PubMed: <https://www.ncbi.nlm.nih.gov/myncbi/abhisheak.sharma.1/bibliography/public/>

EDUCATION

- **Ph.D. (Pharmacokinetics & Metabolism)** (2011-2015) from CSIR-Central Drug Research Institute (**CDRI**), Lucknow, India

Dissertation Title: Interaction studies of concurrently co-administered clinically important drugs on the pharmacokinetic and pharmacodynamic profile of centchroman and pre-clinical pharmacokinetic profiling of biologically active CDRI compounds

Mentor: Prof. Jawahar Lal, Ph.D., Head and Senior Principal Scientist, Pharmacokinetic & Metabolism Division, CSIR-Central Drug Research Institute (**CDRI**), Lucknow, India

- **Master of Pharmacy** (Pharmaceutical Chemistry) (2006-2008) from U. P. Technical University, Lucknow, India

Dissertation Title: Synthesis and pharmacological evaluation of N-benzyl-2-amino-phenylacetic acid derivatives as novel diclofenac analogues

Mentor: Prof. S.R. Hashim, Ph.D., Former Deputy Director, CSIR-Indian Institute of Chemical Technology, Hyderabad, India

- **Bachelor of Pharmacy** (2001-2006) from Mohanlal Sukhadia University, Udaipur, India

Title of Project: Herb and drug interactions

Mentor: Prof. A.C. Rana, Ph.D., B.N. College of Pharmacy, Udaipur, India

LICENSURE

- **Registered Pharmacist:** State of Rajasthan, India, License #25695 (2008-present)

ACADEMIC/RESEARCH/TEACHING EXPERIENCE

- **Assistant Professor of Pharmaceutics** (Nov 2022 to present) and **Co-Director**, UF-Translational Drug Development Core (Feb 2024 to present) at the College of Pharmacy, **University of Florida**, Gainesville, FL, USA
- **Research Assistant Professor of Pharmaceutics** (Feb 2019 to Nov 2022) and **Assistant Director**, UF-Translational Drug Development Core (Feb 2020 to Feb 2024) at the College of Pharmacy, **University of Florida**, Gainesville, FL, USA

- **Postdoctoral Research Associate** (Jan 2017 to Feb 2019) at Department of Pharmaceutics, College of Pharmacy, **University of Florida**, Gainesville, FL, USA
- **Postdoctoral Research Associate** (May 2015 to Jan 2017) at the Department of Pharmaceutics, **University of Mississippi**, MS, USA
- **Sr. Officer (F&D and ADL)** (Sep 2010 to Nov 2011) at Maxcure Drugs and Pharmaceuticals, Haridwar, India
- **Phytochemist** (July 2009 to June 2010) at **National Institute of Ayurveda**, Jaipur, India
- **Lecturer** (July 2008 to June 2009) at **Rajasthan Pharmacy College**, Jaipur, India
- **Summer internship** (May-June 2005) at **Unicure (India) Pvt. Ltd**, Noida, India

OTHER POSITIONS AND SCIENTIFIC APPOINTMENTS

2023-present	Associate Editor , Frontiers in Pharmacology
2023-present	Editorial Board Member , European Journal of Drug Metabolism and Pharmacokinetics
2023-present	Past Chair , Pharmacokinetics, Pharmacodynamics, & Drug Metabolism Community (PPDM), American Association of Pharmaceutical Scientists (AAPS)
2022-2023	Chair , Pharmacokinetics, Pharmacodynamics, & Drug Metabolism Community (PPDM), American Association of Pharmaceutical Scientists (AAPS)
2023-present	Member , AAPS Communities Structure Task Force, AAPS Scientific Advisory Committee (SAC)
2023-present	Topic Editor , Mathematical Modeling of Plant-derived Compounds for Therapeutic Purposes, Frontiers in Pharmacology
2022-present	Graduate Faculty , University of Florida Graduate School, University of Florida, Gainesville, FL, USA
2022-present	Member , UF Center for Pharmacometrics and System Pharmacology, University of Florida, Gainesville, FL, USA
2021-2022	Vice-Chair , Pharmacokinetics, Pharmacodynamics, & Drug Metabolism Community (PPDM), American Association of Pharmaceutical Scientists (AAPS)
2022-present	Guest Editor , <i>Molecules</i> (ISSN 1420-3049, IF 4.41)
2022-present	Section Editor , Drug Discovery and Complex Natural Products, <i>Journal of Applied Bioanalysis</i> (eISSN 2405-710X)
2020-2021	Secretary , Pharmacokinetics, Pharmacodynamics, & Drug Metabolism Community (PPDM), American Association of Pharmaceutical Scientists (AAPS)
2020	Track-chair , Preclinical Development (Chemical), Abstract Screening Committee, American Association of Pharmaceutical Scientists (AAPS)
2018-2022	Member , UF-Postdoctoral Affairs Advisory Committee
2009-13	Co-founder and Director (non-salaried), Pharmacophore Solutions, Jaipur, India
2010-12	Co-founder and Director (non-salaried), Forever Pharmaceuticals, Jaipur, India

SKILLS AND RESEARCH INTERESTS

- Pharmacokinetics and metabolism of complex natural products
- Feto-maternal pharmacokinetics of drugs of abuse
- *In vitro* and *in vivo* pharmacokinetics [investigational new drug (IND) enabling] of new chemical entities (NCEs) as potential therapeutics
- Pharmacokinetic modeling and simulation
- Analytical and bioanalytical method (UPLC-MS/MS, UPLC-PDA/FL, and UPLC/PDA-MS) development and validation for the quantification of small molecules and peptides (NCEs/drugs/natural products and/or metabolites)
- Phytochemical standardization of herbal drugs
- Pharmacokinetic and pharmacodynamic drug-drug, herb-drug, and herb-herb interaction studies

TEACHING EXPERIENCE

- **Rajasthan Pharmacy College**
 1. Pharmaceutical Analysis II
 2. Biochemistry
 3. Medicinal Chemistry I
- **National Institute of Ayurveda**
 1. Analysis and Standardization of Ayurvedic Products and Dietary Supplements
- **University of Mississippi**
 1. Pharmacokinetic Modeling (substitute for the professor)
- **University of Florida**
 1. PHA6935/PHA6185 Life Cycle of a Drug (Pharmacokinetics and Metabolism)
 2. GMS6009 Principles of Drug Action and Therapeutics (Pharmacokinetics and Metabolism)
 3. GMS6847 Translational Research and Therapeutics: Bench, Bedside, Community, & Policy
 4. PHA6416 Pharmaceutical Analysis I
 5. HOS6932 Cultivation, Extraction, and Application of Medicinal Plants and Their Bioactive Compounds
 6. PHA7980 Research for Doctoral Dissertation
 7. PHA7979 Advanced Research
 8. PHA6125 Introduction to Quantitative Pharmacology

MENTORSHIP (MENTORED OR CO-MENTORED)

- Undergraduate students
 1. Raluca Popa (2019-20), Senior Thesis Title: Bioanalytical method development and pharmacokinetics of MCI-92, a sigma-1 receptor antagonist
 2. Zev N Karve, Rishiraj Ganguli, and Miranda I McManus (Fall 2020)
 3. Sami M Hemaidan, Hadi S Hemaidan and Romulo R dos Reis (Fall 2021)
 4. Hadi Safouh Hemaidan and Regazzini dos Reis (Spring 2022)
 5. Maya Hemaidan and Maria D. Melara (Spring 2023)
 6. Brian J. Chiang (Fall 2023)

7. James P. Williams and Brian J. Chiang (Spring 2024)
- Pharm.D. students
 1. Peter Ramdhan (Fall 2020)
 2. Seth Malhotra (Summer 2021)
 3. Jordyn L Wiener (Fall 2021)
 4. Rachel A Keller (Spring 2022)
 5. Daniel J Kohl (Summer 2022)
 - Visiting scholars
 1. Gerrit Remko Huisman (Nov 2021-present)
 2. Narumon Sengnon (March 2023-Sep 2023)
 - Master's students
 1. K. Ravindrachary (2012-13)
 2. Nagarjun Rangaraj (2013-14)
 3. Kalpesh Vaghasiya (2013-14)
 4. Yaseen Malik (2014-15)
 - Ph.D. students
 1. Tamara I. King (2018-20)
 2. Erin C. Berthold (2018-22)
 3. Michelle A. Kuntz (2020-present)
 4. Alexandria S. Senetra (2021-present)
 5. Yi-Hua Chiang (2022-present)
 6. Manoj Gundeti (2023-present)
 7. Omar I. Elashkar (2023-present)
 - Post-doctoral Research Associates
 1. Shyam H. Kamble (2018-21)
 2. Kanumuri Siva Rama Raju (2019-22)
 3. Abhishek Gour (2023-present)
 - Assistant Scientists
 1. Kanumuri Siva Rama Raju (2022-present)

HONORS, AWARDS AND ACHIEVEMENTS

- 2021 UF/IFAS **High Impact Research Publication Award**
- **Champions of CUR** (2020) by UF Center for Undergraduate Research
- Behavior, Biology, and Chemistry: **Translational Research in Addiction** (BBC) **Travel Award** (2017) to attend the 10th Annual BBC Meeting in San Antonio, Texas
- Recipient of **travel award** (2014) by **Novartis** (Basel, Switzerland) to attend **Uppsala Pharmacometrics Summer School**, Uppsala University, Uppsala, Sweden
- Recipient of **Senior Research Fellowship** during graduate studies (2011-2015) by **Indian Council of Medical Research** (ICMR), Ministry of Health and Family Welfare, Government of India, New Delhi
- Recommended as a **GATE-Junior Research Fellow** by Director, CSIR-CDRI, Lucknow
- Recipient of **MHRD-Post-graduate fellowship** (2006-2008) during M. Pharm. studies by All India Council for Technical Education (AICTE), Government of India, New Delhi
- Participated in State Science fair (2000) after getting **1st prize** at district level

MEMBERSHIPS OF PROFESSIONAL ORGANIZATIONS

- Member of American Association of Pharmaceutical Scientists (**AAPS**) (2015-present)
- **Life member** of Association of Community Pharmacists of India (RJ/12/LM)
- **Life member** of Association of Pharmaceutical Teachers of India (RA/LM-217)
- Member of Society for Laboratory Automation and Screening (62103)
- Life member of Pharma Helpline Society India

COMPUTER PROFICIENCY/ DATA ANALYSIS SKILLS

- Population pharmacokinetics using non-linear mixed effect modeling program NONMEM
- Pharmacokinetic and pharmacodynamic data analysis using Phoenix WinNonlin and physiological based pharmacokinetic modeling using GastroPlus, PK-Sim and Simcyp software packages
- Technical software (Scientific software) proficiency in ChemDraw, Endnote, GraphPad Prism, SigmaPlot and SPSS

INSTRUMENTATION EXPERTISE

- **LC-MS/MS**
 - ✓ API-5500 Qtrap, API-4000 Qtrap and API-4000 (Sciex) using Analyst and LightSight (Sciex) software
 - ✓ Waters Xevo TQD, Xevo TQ-S Micro and Micromass Quattro Micro Triple Quadrupole System (Waters) using MassLynx software
 - ✓ Ion source-ESI, APCI, and APPI
- **LC-Q-TOF**
 - ✓ Agilent 6545 using MassHunter B.05 software (Agilent Technologies)
- **HPLC**
 - ✓ LC-10, LC-10Avp (Shimadzu) coupled with PDA/UV/fluorescence detectors and controlled with Class LC-10, Class VP software.
 - ✓ Acquity (Waters) ultra performance liquid chromatography Class I (UPLC) using MassLynx Software
- **High Throughput Screening System**
 - ✓ HTS system (TECAN) with Freedom Evo and Maggalin software
- **Automated Blood Sampling System**
 - ✓ Culex NxT™ with Rturn - Multi Animal (BASi)

INVITED JOURNAL/MEETING REFEREE (Selected)

- ADMET & DMPK
- Bioanalysis
- Current Clinical Pharmacology
- Drug Testing and Analysis
- European Journal of Drug Metabolism and Pharmacokinetics
- European Journal of Pharmaceutical Sciences
- Frontiers in Aging Neuroscience
- Heliyon

- Journal of Analytical Sciences and Technology
- Journal of Bioequivalence & Bioavailability
- Journal of Chromatography B
- Journal of Ethnopharmacology
- Journal of Oral Medicine
- Journal of Pharmacology and Experimental Therapeutics
- Journal of Pharmaceutical and Biomedical Analysis
- Medicinal Chemistry Research
- Molecules
- Revista Brasileira de Farmacognosia
- Judge for UF College of Pharmacy Research Show Case (2020, 2021, 2022 and 2023) poster session held at University of Florida, Gainesville, FL 32610, USA
- Track-chair for Preclinical Development (Chemical) AAPS Abstract Screening Committee (2020)
- Chairperson for a scientific session at Fostering Interdisciplinary Research in Medicines 2019 International Conference organized by the University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur, India
- Abstract reviewer for AAPS annual meeting (2016-present)
- Judge for Graduate Student Research Day 2018 poster session held at University of Florida, Gainesville, FL 32610, USA
- Rapid fire moderator (Bioanalysis) at AAPS Pharm Sci 360 conference in Washington DC (2018)

GRANT REVIEW

- Grant reviewer for Natural Products Neuroscience Assistantship (2015-2016), Center of Research Excellence in Natural Products Neuroscience (CORE-NPN), University of Mississippi
- Grant reviewer for the Student Research Center Health Research Concepts Competition (HRCC), ASCEND Center for Biomedical Research at Morgan State University (MSU), NIH BUILD (U54) Initiative

PUBLICATIONS

Research Articles

1. E.C. Berthold, S.H. Kamble, S.R.R. Kanumuri, M.A. Kuntz, A.S. Senetra, Y.-H. Chiang, S. Mukhopadhyay, C.R. McCurdy, **A. Sharma**, Pharmacokinetic interaction of kratom and cannabidiol in male rats. *Pharmaceutics* 2024, 16, 318. DOI: 10.3390/pharmaceutics16030318
2. K.E. Smith, J.M. Rogers, **A. Sharma**, C.R. McCurdy, S.T. Weiss, K.E. Dunn, J.D. Feldman, M.A. Kuntz, S. Mukhopadhyay, K.S.R. Raju, R.C. Taylor, D.H. Epstein. responses to a "typical" morning dose of kratom in people who use kratom regularly: A direct-observation study. *J Addict Med* 2024; DOI: 10.1097/ADM.0000000000001259
3. M. McDougale, A Araujo, A Singh, M. Yang, I. Braga, V. Paille, R. Mendez-Hernandez, M. Vergara, L.N.Woodie, A. Gour, **A. Sharma**, N. Urs, B. Warren, G. Lartigue. Separate gut-

- brain circuits for fat and sugar reinforcement combine to promote overeating. *Cell Metab* 2024; DOI: 10.1016/j.cmet.2023.12.014
4. L.E. Rusali, A.M. Lopez-Hernandez, K.M. Kremiller, G.C. Kulkarni, A. Gour, C.J. Straub, M.D. Argade, C.J. Peters, **A. Sharma**, L. Toll, A. Cippitelli, A.P. Riley. Synthesis of $\alpha\beta4$ nicotinic acetylcholine receptor modulators derived from aristoquinoline that reduce reinstatement of cocaine-seeking behavior. *J Med Chem* 2024; DOI: 10.1021/acs.jmedchem.3c01758.
 5. E.C. Berthold, S.H. Kamble, S.R.R. Kanumuri, M.A. Kuntz, A.S. Senetra, Y. Chiang, L.R. McMahon, C.R. McCurdy, **A. Sharma**. Comparative pharmacokinetics of commercially available cannabidiol isolate, broad-spectrum, and full-spectrum products. *Eur J Drug Metab Pharmacokinet* 2023; DOI: 10.1007/s13318-023-00839-3
 6. L.E. Rusali, A.M. Lopez-Hernandez, K.M. Kremiller, G.C. Kulkarni, A. Gour, C.J. Straub, M.D. Argade, C.J. Peters, **A. Sharma**, L. Toll, A. Cippitelli, A.P. Riley. Synthesis of $\alpha\beta4$ Nicotinic Acetylcholine Receptor Modulators Derived from Aristquinoline That Reduce Reinstatement of Cocaine-Seeking Behavior. *J Med Chem* 2023; DOI: 10.1021/acs.jmedchem.3c01758
 7. E.E. Kaczor, K. Greene, K.M. Babu, E.C. Berthold, **A. Sharma**, S.P. Carreiro. Commercial Delta-8 THC products: an analysis of content and labeling. *J Med Toxicol* 2023; DOI: 10.1007/s13181-023-00974-y
 8. S.L. Penman, N. Roeder, E.C. Berthold, A.S. Senetra, M. Marion, B.J. Richardson, O. White, N.L. Fearby, C.R. McCurdy, J. Hamilton, **A. Sharma**, P.K. Thanos. FABP5 is important for cognitive function and is an important regulator of the physiological effects and pharmacokinetics of acute $\Delta 9$ tetrahydrocannabinol inhalation in mice. *Pharmacol Biochem Behav* 2023; DOI: 10.1016/j.pbb.2023.173633
 9. E. Gazarov, S. Zequeira, A. Senetra, J. Howard, **A. Sharma**, C.R. McCurdy, J. Lewis, J. Bizon, B. Setlow. Pharmacokinetics of delta-9-tetrahydrocannabinol following acute cannabis smoke exposure in mice; effects of sex, age, and strain. *Front Pharmacol* 2023; 14: 1227220.
 10. A.C. Brice-Tutt, D.S. Montgomery, C.M. Kramer, P.M. Novotny, W.L. Malphurs, **A. Sharma**, R.M. Caudle, A.W. Bruijnzeel, B. Setlow, J.K. Neubert, N.P. Murphy. An ethogram analysis of cutaneous thermal pain sensitivity and oxycodone reward-related behaviors in rats. *Scientific Reports* 2023, 13(1), p.10482; DOI: 10.1038/s41598-023-36729-6
 11. S.H. Kamble, S. Obeng, F. León, L.F. Restrepo, T.I. King, E.C. Berthold, K.S.R Kanumuri, L.R. Gamez-Jimenez, V.L.C. Pallares, A. Patel, N.P. Ho, A. Hampson, C.R. McCurdy, L.R. McMahon, J.L. Wilkerson, **A. Sharma***, T. Hiranita*. Pharmacokinetic and pharmacodynamic consequences of CYP3A inhibition on mitragynine metabolism in rats. *J Pharmacol Exp Ther* 2023; DOI: 10.1124/jpet.122.001525 (*co-corresponding author)
 12. K.E. Smith, J.D. Feldman, K.E. Dunn, C.R. McCurdy, O.Grundmann, A. Garcia-Romeu, L.V. Panlilio, J.M. Rogers, **A. Sharma**, S. Pont-Fernandez, M. Kheifets, Novel methods for the remote investigation of emerging substances: Application to kratom. *Exp Clin Psychopharmacol* 2023; DOI: 10.1037/pha0000656
 13. S.L. Penman, E.C. Berthold, A. Mihalkovic, N. Hammond, C.R. McCurdy, R.D. Eiden, **A. Sharma**, P. Thanos. Vaporized Delta-9-tetrahydrocannabinol inhalation in female sprague dawley rats: a pharmacokinetic and behavioral assessment. *Curr Pharm Des.* 2023; DOI: 10.2174/1381612829666230419093809
 14. L.C. Laforest, M.A. Kuntz, K.S.R. Kanumuri, S. Mukhopadhyay, **A. Sharma**, S.E. O'Connor, C.R. McCurdy, S.S. Nadakuduti. Metabolite and molecular characterization of mitragyna

- speciosa identifies developmental and genotypic effects on monoterpene indole and oxindole alkaloid composition. **J Nat Prod** 2023; DOI: 10.1021/acs.jnatprod.3c00092
15. C.V. Roemeling, B.P. Doonan, K. Klippel, D. Schultz, L. Hoang-Minh, V. Trivedi, C. Li, R. Russell, K.S.R. Kanumuri, **A. Sharma**, H.W. Tun, D. Mitchell. Oral IRAK-4 inhibitor CA-4948 is blood-brain barrier penetrant and has single-agent activity against CNS lymphoma and melanoma brain metastases. **Clin Cancer Res** 2023; DOI: 10.1158/1078-0432.CCR-22-1682
 16. K.S.R. Raju, J. Mamallapalli, R. Nelson, C.R. McCurdy, C.A. Mathews, C. Xing, **A. Sharma**. Clinical pharmacokinetics of kavalactones after oral dosing of standardized kava extract in healthy volunteers. **J Ethnopharmacol** 2022; 115514. DOI: 10.1016/j.jep.2022.115514
 17. N. Leksungnoen, T. Andriyas, C. Ngernsaengsaruy, S. Uthairatsamee, P. Racharak, W. Sonjaroon, R. Kjellgren, B. Pearson, C.R. McCurdy, **A. Sharma**, Variations in mitragynine content in the naturally growing Kratom (*Mitragyna speciosa*) population of Thailand. **Front Plant Sci** 2022, p.4259. DOI: 10.3389/fpls.2022.1028547
 18. S.H. Kamble, E.C. Berthold, K.S.R. Kanumuri, T.I. King, M.A. Kuntz, F. León, M. Mottinelli, L.R. McMahon, C.R. McCurdy, **A. Sharma**. Metabolism of speciociliatine, an overlooked kratom alkaloid for its potential pharmacological effects. **The AAPS Journal** 2022; 24: 86.
 19. E.C. Berthold, S.H. Kamble, K.S.R. Raju, M.A. Kuntz, A.S. Senetra, M. Mottinelli, F. León, L.F. Restrepo, A. Patel, N.P. Ho, T. Hiranita, **A. Sharma***, L.R. McMahon, C.R. McCurdy*. The Lack of Contribution of 7-Hydroxymitragynine to the Antinociceptive Effects of Mitragynine in Mice: A Pharmacokinetic and Pharmacodynamic Study. **Drug Metab Dispos.** 2022; 50: 158–167. (*co-corresponding author) (**Best Research Paper Award 2023, UF Department of Medicinal Chemistry**)
 20. M. Zhang, **A. Sharma**, F. León, B. Avery, R. Kjellgren, C.R. McCurdy, B.J. Pearson, Plant growth and phytoactive alkaloid synthesis in kratom [*Mitragyna speciosa* (Korth.)] in response to varying radiance. **Plos One** 2022; 17: e0259326.
 21. R. Popa, S.H. Kamble, K.S.R. Raju, T.I. King, E.C. Berthold, S. Intagliata, **A. Sharma**, C.R. McCurdy. UPLC-MS/MS method for the quantification of MCI-77, a novel sigma-1 receptor ligand, and its application to pharmacokinetic studies. **J Chromatogr B** 2022; 1196: 123187.
 22. K.T. LeSaint, S. Yin, **A. Sharma**, B.A. Avery, C.R. McCurdy, J.C. Waksman. Acute renal insufficiency associated with consumption of hydrocodone-and morphine-adulterated kratom (*Mitragyna speciosa*). **J Emerg Med.** 2022; DOI: 10.1016/j.jemermed.2022.02.004
 23. E.A. Maxwell, T.I. King, S.H. Kamble, K.S.R. Raju, E.C. Berthold, F. León, A. Hampson, L.R. McMahon, C.R. McCurdy, **A. Sharma**, Oral pharmacokinetics in beagle dogs of the mitragynine metabolite, 7-hydroxymitragynine. **Eur J Drug Metab Pharmacokinet** 2021; 46: 459–463.
 24. J. Mamallapalli, K.S.R. Raju, P. Corral, E. Johnston, C. Zhuang, C.R. Mccurdy, C. Mathews, **A. Sharma***, C. Xing*, Characterization of different forms of kava (*Piper methysticum*) products by UPLC-MS/MS. **Planta Medica** 2021; DOI: 10.1055/a-1708-1994 (*co-corresponding author)
 25. D.A. Ostrov, A.P. Bluhm, D. Li, J.Q. Khan, M. Rohamare, K. Rajamanickam, K.K. Bhanumathy, J. Lew, D. Falzarano, F.J. Vizeacoumar, J.A. Wilson, M. Mottinelli, K.S.R. Raju, **A. Sharma**, C.R. McCurdy, M.H. Norris. Highly specific sigma receptor ligands exhibit anti-viral properties in SARS-CoV-2 infected cells. **Pathogens** 2021; 10: 1514.

26. F. León, S. Obeng, M. Mottinelli, Y. Chen, T.I. King, E.C. Berthold, S.H. Kamble, L.F. Restrepo, A. Patel, L.R. Gamez-Jimenez, C. Lopera-Londoño, T. Hiranita, **A. Sharma**, A.J. Hampson, C.E. Canal, L.R. McMahon, C.R. McCurdy, Activity of *Mitragyna speciosa* ("Kratom") alkaloids at serotonin receptors. **J Med Chem** 2021; 64: 13510-13523.
27. A. Tadjalli, Y.B. Seven, **A. Sharma**, C.R. McCurdy, D.C. Bolser, E.S. Levitt, G.S. Mitchell, Acute morphine blocks spinal respiratory motor plasticity via long-latency mechanisms that require toll-like receptor 4 signaling. **J Physiol** 2021; 599: 3771-3797.
28. S. Joseph*, **A. Sharma***, L.P. Horne, C.E. Wood, T. Langaee, M.O. James, P.W. Stacpoole and M. Keller-Wood, Pharmacokinetic and biochemical profiling of Sodium Dichloroacetate in pregnant ewes and fetuses. **Drug Metab Dispos** 2021; 49: 451-458. (*co-first author)
29. N.J.-Y. Chear, F. León, **A. Sharma**, K.S.R. Raju, G. Zwolinski, K.A. Abboud, D. Singh, L. F. Restrepo, A. Patel, T. Hiranita, S. Ramanathan, A.J. Hampson, L.R. McMahon, C.R. McCurdy, Exploring the chemistry of alkaloids from Malaysian *Mitragyna speciosa* (Kratom) and the role of oxindoles on human opioid receptors. **J Nat Prod** 2021; 84: 1034-1043.
30. S.H. Kamble, E.C. Berthold, T.I. King, K.S.R. Raju, R. Popa, J.R. Herting, F. León, **A. Sharma**, L.R. McMahon, B.A. Avery, C.R. McCurdy, Pharmacokinetics of eleven kratom alkaloids following an oral dose of either traditional or commercial kratom products in rats. **J Nat Prod** 2021; 84: 1104-1112.
31. E.C. Berthold, S.H. Kamble, K.S.R. Raju, T. I. King, R. Popa, **A. Sharma**, F. León, B. A. Avery, L.R. McMahon, C.R. McCurdy, Preclinical pharmacokinetic study of speciociliatine, a kratom alkaloid, in rats using an UPLC-MS/MS method. **J Pharm Biomed Anal** 2021; 194: 113778.
32. E.A. Maxwell, T.I. King, S.H. Kamble, K.S.R. Raju, E.C. Berthold, F. León, B.A. Avery, L.R. McMahon, C.R. McCurdy, **A. Sharma**, Pharmacokinetics and safety of mitragynine in beagle dogs. **Planta Med** 2020; 86: 1278-1285.
33. M. Zhang, **A. Sharma**, F. León, B.A. Avery, R. Kjelgren, C.R. McCurdy, B.J. Pearson, Effects of nutrient fertility on growth and alkaloidal content in *Mitragyna speciosa* (Kratom). **Front Plant Sci** 2020; 11: 597696 (2021 UF/IFAS High Impact Research Publication Award)
34. E.C. Berthold, R. Yang, **A. Sharma**, S.H. Kamble, K.S.R. Raju, T. I. King, R. Popa, J.H. Freeman, Z.T. Brym, B.A. Avery, C.R. McCurdy, Regulatory sampling of industrial hemp plant samples (*Cannabis sativa* L.) using UPLC-MS/MS method for detection and quantification of twelve cannabinoids. **J Cannabis Res** 2020; 2: 1-11.
35. L.L. Wilson, H.M. Harris, S.O. Eans, A.C. Brice-Tutt, T.J. Cirino, H.M. Stacy, C. A. Simons, F. León, **A. Sharma**, E.W. Boyer, B.A. Avery, J.P. McLaughlin, C.R. McCurdy, Lyophilized kratom tea as a therapeutic option for opioid dependence. **Drug Alcohol Depend** 2020; 216: 108310.
36. R. Popa, S.H. Kamble, K.S.R. Raju, T.I. King, E. C. Berthold, S. Intagliata, **A. Sharma**, C.R. McCurdy, Bioanalytical method development and pharmacokinetics of MCI-92, a sigma-1 receptor ligand. **J Pharm Biomed Anal** 2020; 191: 113610.
37. S. Kamble, F. León, T.I. King, E.C. Berthold, C. Lopera-Londoño, K.S.R. Raju, A. Hampson, **A. Sharma**, B. Avery, L. McMahon, and C.R. McCurdy, Metabolism of a kratom alkaloid metabolite in human plasma increases its opioid potency and efficacy. **ACS Pharmacol Transl Sci** 2020; 3: 1063-1068. (Cover paper)
38. S. Intagliata, **A. Sharma**, T.I. King, C. Mesangeau, M. Seminerio, F.T. Chin, L. L. Wilson, R.R. Matsumoto, J.P. McLaughlin, B.A. Avery, C.R. McCurdy, Discovery of a highly selective sigma-2 receptor ligand, 1-(4-(6,7-dimethoxy-3,4-dihydroisoquinolin-2(1H)-yl)butyl)-3-methyl-

- 1H-benzo[d]imidazol-2(3H)-one (CM398), with drug-like properties and antinociceptive effects *in vivo*. **AAPS J** 2020; 22: 94.
39. R. Chellian, A. Behnood-Rod, R. Wilson, S.H. Kamble, **A. Sharma**, C.R. McCurdy, A.W. Bruijnzeel, Adolescent nicotine and tobacco smoke exposure enhances nicotine self-administration in female rats. **Neuropharmacol** 2020; 176: 108243.
 40. A. Behnood-Rod, R. Chellian, R. Wilson, T. Hiranita, **A. Sharma**, F. León, C.R. McCurdy, L. McMahon, A.W. Bruijnzeel, Evaluation of the rewarding effects of mitragynine and 7-hydroxymitragynine in an intracranial self-stimulation procedure in male and female rats. **Drug Alcohol Depend** 2020; 215: 108235.
 41. T.I. King, **A. Sharma**, S.H. Kamble, F. León, E.C. Berthold, R. Popa, O. Cerlati, B.M. Prentice, L.R. McMahon, C.R. McCurdy, B.A. Avery, Bioanalytical method development and validation of corynantheidine, a kratom alkaloid, using UPLC-MS/MS, and its application to preclinical pharmacokinetic studies. **J Pharm Biomed Anal** 2020; 180: 113019.
 42. S. Intagliata, H. Agha, T.A. Kopajtic, J.L. Katz, S.H. Kamble, **A. Sharma**, B.A. Avery, C.R. McCurdy, Exploring 1-adamantanamine as an alternative amine moiety for metabolically labile azepane ring in newly synthesized benzo[d]thiazol-2(3H)one σ receptor ligands. **Med Chem Res** 2020; 29: 1697-1706.
 43. B.J. Pearson, S.M. Campbell, B. Avery, C. McCurdy, J. Francisco, **A. Sharma** and R. Kjellgren, Preliminary examination of mitragynine and 7-hydroxymitragynine synthesis in response to production environment and postharvest techniques of *Mitragyna speciosa*. **Acta Hort** 2020; 1274: 89-96.
 44. D. Singh, NJ Chear, S. Narayanan, F. Leon, **A. Sharma**, C.R. McCurdy, B.A. Avery, V. Balasingam. Patterns and reasons for kratom (*Mitragyna speciosa*) use among current and former opioid poly-drug users. **J Ethnopharmacol** 2020; 249:112462.
 45. S. Obeng, S.H. Kamble, M.E. Reeves, L.F. Restrepo, A. Patel, M. Behnke, N.J.Y. Chear, S. Ramanathan, **A. Sharma**, F. Leon, T. Hiranita, B.A. Avery, L.R. McMahon, C.R. McCurdy, Investigation of the adrenergic and opioid binding affinities, metabolic stability, plasma protein binding properties, and functional effects of selected indole-based kratom alkaloids. **J Med Chem** 2020; 63: 433-439.
 46. **A. Sharma**, S.H. Kamble, F. Leon, N.J-Y. Chear, T.I. King, E.C. Berthold, S. Ramanathan, C.R. McCurdy, B.A. Avery, Simultaneous quantification of ten key kratom alkaloids in *Mitragyna speciosa* leaf extracts and commercial products by ultra-performance liquid chromatography - tandem mass spectrometry. **Drug Test Anal** 2019; 11:1162–1171 (One of the **top downloaded (2018-2019)** and **top cited paper (2019-2020)** for DTA).
 47. S. Khan, X. Zhang, D. Lv, Q. Zhang, Y. He, P. Zhang, X. Liu, D. Thummuri, Y. Yuan, J.S. Wiegand, J. Pei, W. Zhang, **A. Sharma**, C.R. McCurdy, V.M. Kuruvilla, N. Baran, A.A. Ferrando, Y. Kim, A. Rogojina, P.J. Houghton, G. Huang, R. Hromas, M. Konopleva, G. Zheng, D. Zhou, A selective BCL-XL PROTAC degrader achieves safe and potent antitumor activity. **Nat Med** 2019; 25: 1938–1947.
 48. S.H. Kamble, **A. Sharma**, T.I. King, E.C. Berthold, F. León, P.K.L. Meyer, S.R. R. Kanumuri, L.R. McMahon, C.R. McCurdy, B.A. Avery, Exploration of cytochrome P450 inhibition mediated drug-drug interaction potential of kratom alkaloids. **Toxicol Lett** 2019; 319: 148-154.

49. T.I. King, A-C Roewekamp, **A. Sharma**, S. Harrison, C. Mesangeau, M. Mottinelli, S.H. Kamble, C.R. McCurdy, B.A. Avery, Bioanalytical Method Development and Validation of MES207, a Neuropeptide FF Receptor Antagonist, and its Application in Preclinical Pharmacokinetics. *J Chromatogr B* 2019; 1134: 121875.
50. M. Wang, R.B. Ferreira, M.E. Law, B.J. Davis, E. Yaaghubi, A.F. Ghilardi, **A. Sharma**, B.A. Avery, E. Rodriguez, C.W. Chiang, S. Narayan, C.D. Heldermon, R.K. Castellano, B.K. Law, A novel proteotoxic combination therapy for EGFR+ and HER2+ cancers. *Oncogene* 2019; 38: 4264–4282.
51. V.K. Pawar, Y. Singh, K. Sharma, A. Shrivastav, **A. Sharma**, A. Singh, J.G. Meher, P. Singh, K. Raval, A. Kumar, H.K. Bora, D. Datta, J. Lal, M.K. Chourasia, Improved chemotherapy against breast cancer through immunotherapeutic activity of fucoidan decorated electrostatically assembled nanoparticles bearing doxorubicin. *Int J Biol Macromol* 2019; 122: 1100-1114.
52. S.H. Kamble, **A. Sharma**, T.I. King, F. Leon, C.R. McCurdy, B.A. Avery. Metabolite profiling and identification of enzymes responsible for the metabolism of mitragynine, the major alkaloid of *Mitragyna speciosa* (kratom), *Xenobiotica* 2018; 49: 1279–1288.
53. B.A. Avery, S.P. Boddu, **A. Sharma**, E.B. Furr, F. Leon, S.J. Cutler and C.R. McCurdy. Comparative pharmacokinetics of mitragynine after oral administration of *Mitragyna speciosa* (kratom) leaf extracts in rats. *Planta Medica* 2018; 85: 340-346.
54. Y. Wang, S.O. Eans, H.M. Stacy, S.C. Narayanapillai, **A. Sharma**, N. Fujioka, L. Haddad, J. McLaughlin, B.A. Avery and C. Xing. A stable isotope dilution tandem mass spectrometry method of major kavalactones and its applications. *Plos one* 2018; 13: e0197940.
55. **A. Sharma**, S. Jaiswal, M. Shukla and J. Lal. Effect of arteether and pyrimethamine coadministration on the pharmacokinetic and pharmacodynamic profile of ormeloxifene. *Naunyn-Schmiedeberg's Arch Pharmacol* 2017; 390: 971-976.
56. M. Shukla, M.M.A. Ibrahim, M. Jain, S. Jaiswal, **A. Sharma**, K. Hanif, J. Lal. Model based population PK-PD analysis of furosemide for BP lowering effect: A comparative study in primary and secondary hypertension. *Eur J Pharm Sci* 2017; 109: 253-261.
57. B.A. Avery, D. Pabbisetty, L. Li, **A. Sharma**, M.K. Gundluru, A.G. Chittiboyina, J.S. Williamson, M.A. Avery. A pharmacokinetic comparison of homodimer ARB-92 and heterodimer ARB-89: novel, potent antimalarial candidates derived from 7 β -hydroxyartemisinin. *J Pharm Invest* 2017; 48: 585-593.
58. S. Jaiswal, **A. Sharma**, M. Shukla and J. Lal. Simultaneous LC–MS-MS determination of lopinavir and rifabutin in human plasma. *J Chromatogr Sci* 2017; 55: 617-624.
59. B. Vashistha, **A. Sharma**, V. Jain. Ameliorative potential of ferulic acid in vincristine-induced painful neuropathy in rats: An evidence of behavioral and biochemical examination. *Nutr Neurosci* 2017; 1: 60-70.
60. B.A. Avery, P.K. Vuppala, S. Jamalapuram, **A. Sharma**, C. Mesangeau, F.T. Chin, C.R. McCurdy. Quantification of highly selective sigma-1 receptor antagonist CM304 using liquid chromatography tandem mass spectrometry and its application to a pre-clinical pharmacokinetic study. *Drug Test Anal* 2017; 9: 1236–1242.
61. V.K. Pawar, Y. Singh, K. Sharma, A. Shrivastav, **A. Sharma**, A. Singh, J.G. Meher, P. Singh, K. Raval, H.K. Bora, D. Datta, J. Lal, M.K. Chourasia. Doxorubicin hydrochloride loaded

- zymosan-polyethylenimine biopolymeric nanoparticles for dual 'chemoimmunotherapeutic' intervention in breast cancer. *Pharm. Res.* 2017; 34: 1857-1871.
62. **A. Sharma**, S. Jaiswal, M. Shukla, J.K. Singh, G.H. Narisipuram and J. Lal. PK-PD interaction study of angiotensin II antagonist, losartan, with selective estrogen receptor modulator, centchroman. *Int J Pharmacokinetics* 2016; 1: 17-23.
 63. A.G. Lydecker, **A. Sharma**, C.R. McCurdy, B.A. Avery, K.M. Babu, E.W. Boyer. Suspected adulteration of commercial kratom products with 7-hydroxymitragynine. *J Med Toxicol* 2016; 12: 341-349.
 64. S. Jaiswal, **A. Sharma**, M. Shukla and J. Lal. Liquid chromatography coupled electrospray ionization mass spectrometry for quantification of miltefosine in human and hamster plasma. *Bioanalysis* 2016; 8: 533-545.
 65. S. Jaiswal, M. Shukla, **A. Sharma**, R. Nagarjun, V. Kalpesh, Y. Malik and J. Lal. Preclinical pharmacokinetics and ADME characterization of a novel anticancer chalcone, cardamonin. *Drug Test Anal* 2016; 9: 1124-1136.
 66. M. Shukla, Y. Malik, S. Jaiswal, **A. Sharma**, D.K. Tanpula, Ravi Goyani, J. Lal. A mechanistic investigation of the bioavailability enhancing potential of lysergol, a novel bioenhancer, using curcumin. *RSC Advances* 2016; 6: 58933-58942.
 67. M. Shukla, S. Jaiswal, **A. Sharma**, P.K. Shrivastava, A. Arya, A.K. Dwivedi, J. Lal. A combination of complexation and self-nanoemulsifying drug delivery system for enhancing oral bioavailability and anticancer efficacy of curcumin. *Drug Dev Ind Pharm.* 2016; 43: 847-861.
 68. S. Pandey, S.S. Chauhan, R. Shivahare, **A. Sharma**, S. Jaiswal, S. Gupta, J. Lal, P.M.S. Chauhan. Identification of a diverse indole-2-carboxamides as a potent antileishmanial chemotypes. *Eur J Med Chem* 2016; 110: 237-245.
 69. **A. Sharma**, S. Jaiswal, M. Shukla, Y. Malik and J. Lal. Rapid quantitative analysis of ormeloxifene and its active metabolite, 7-desmethyl ormeloxifene, in rat plasma using liquid chromatography-tandem mass spectrometry. *J Chromatogr B* 2015; 997: 7-15.
 70. **A. Sharma**, S. Jaiswal, M. Shukla, K. Ravindrachary and J. Lal. Coadministration of HMG-CoA reductase inhibitors, atorvastatin and rosuvastatin, does not affect contraceptive efficacy of centchroman. *Eur J Contracept Reprod Health Care* 2015; 20: 231-235.
 71. **A. Sharma**, S. Jaiswal, M. Shukla, M. Sharma, P.M.S. Chauhan, R. Nagarjun, V. Kalpesh and J. Lal. HPLC-MS-MS method development and validation of antileishmanial agent, S010-0269, in hamster serum. *J Chromatogr Sci* 2015; 53: 1542-1548.
 72. S. Jaiswal*, **A. Sharma***, M. Shukla and J. Lal. Gender-related pharmacokinetics and bioavailability of a novel anticancer chalcone, cardamonin, in rats determined by liquid chromatography tandem mass spectrometry. *J Chromatogr B* 2015; 986-987: 23-30. (*co-first author)
 73. H. Nimesh, V. Tiwari, C. Yang, S.R. Gundala, K. Chuttani, P.P. Hazari, A.K. Mishra, **A. Sharma**, J. Lal, A. Katyal, R. Aneja and V. Tandon. Preclinical evaluation of dma, a bisbenzimidazole as radioprotector: toxicity, pharmacokinetics and biodistribution studies in Balb/c mice. *Mol Pharmacol* 2015; 88: 768-778.
 74. K. Upadhyaya, H. Ullah, K. Singh, A. Arun, M. Shukla, N. Srivastav, R. Ashraf, **A. Sharma**, R. Mahar, S.K. Shukla, J. Sarkar, R. Ramachandran, J. Lal, R. Konwar and

- R.P. Tripathi. Identification of gallic acid based glycoconjugates as a novel anti-tumor agents targeting tubulin polymerization. **Org Biomol Chem** 2015; 14: 1338-1358.
75. N. Devender, S. Gunjan, S. Chhabra, K. Singh, V.R. Pasam, S.K. Shukla, **A. Sharma**, S. Jaiswal, S.K. Singh, Y. Kumar, J. Lal, A.K. Trivedi, R. Tripathi and R.P. Tripathi. Identification of β -amino alcohol grafted 1,4,5 trisubstituted 1,2,3-triazoles as potent antimalarial agents. **Eur J Med Chem** 2015; 109: 187-198.
 76. S. Singh, K.K. Roy, S.R. Khan, V.K. Kashyap, **A. Sharma**, S. Jaiswal, S.K. Sharma, M.Y. Krishnan, V. Chaturvedi, J. Lal, S. Sinha, A.D. Gupta, R. Srivastava, A.K. Saxena. Novel, potent, orally bioavailable and selective mycobacterial ATP synthase inhibitors that demonstrated activity against both replicating and non-replicating M. tuberculosis. **Bioorg Med Chem** 2015; 23: 442-452.
 77. K.K.G. Ramakrishna, S. Gunjan, A.K. Shukla, V.R. Pasam, V.M. Balaramanvar, **A. Sharma**, S. Jaiswal, J. Lal, R. Tripathi, A. Srivastava, R. Ramchandran, R.P. Tripathi. Identification of novel phenyl butenonyl C-glycosides with ureidyl and sulfonamidyl moieties as antimalarial agents. **ACS Med Chem Lett** 2014; 5, 878-883.
 78. M. Sharma, K. Chauhan, R. Shivahare, P. Vishwakarma, M.K. Suthar, **A. Sharma**, S. Gupta, J.K. Saxena, J. Lal, P. Chandra, B. Kumar and P.M.S. Chauhan. Discovery of a new class of natural product-inspired quinazolinone hybrid as potent antileishmanial agents. **J Med Chem** 2013; **56**: 4374-4392.
 79. S. Pandey, P. Agarwal, K. Srivastava, S. Rajakumar, S.K. Puri, P. Verma, J.K. Saxena, **A. Sharma**, J. Lal and P.M.S. Chauhan. Synthesis and bioevaluation of novel 4-aminoquinoline-tetrazole derivatives as potent antimalarial agents. **Eur J Med Chem** 2013; **66**: 69-81.
 80. S. Jayalakshmi, V.K. Lal, A. Patra, A.K. Wahi, **A. Sharma**. Pharmacognostical studies on stem bark of *Gmelina arborea*. **Indian J Nat Prod** 2010; 25(4): 21-27.

Review Articles

1. C.R. McCurdy, **A. Sharma**, K.E. Smith, C.A. Veltri, S.T. Weiss, C.M. White, O. Grundmann. An update on the clinical pharmacology of kratom: uses, abuse potential and future considerations. **Expert Rev Clin Pharmacol**. 2024. DOI: 10.1080/17512433.2024.2305798.
2. O. Grundmann, A. Garcia-Romeu, C.R. McCurdy, **A. Sharma**, K.E. Smith, M.T Swogger, S.T. Weiss, Not all kratom is equal: The important distinction between native leaf and extract products. **Addict** 2023. DOI: 10.1111/add.16366
3. S. Mukhopadhyay, S. Gupta, J.L. Wilkerson, **A. Sharma**, L.R. McMahon, C.R. McCurdy, Receptor selectivity and therapeutic potential of kratom in substance use disorders. **Curr Addict Rep** 2023. DOI: 10.1007/s40429-023-00472-9
4. C.N. Stanciu, S.A. Gnanasegaram, G.L. Rader III, **A. Sharma**, C.R. McCurdy, What is the kratom overdose risk? A Systematic Literature Review. **Curr Addict Rep** 2023, 1-20. DOI: 10.1007/s40429-022-00464-1
5. K.E. Smith, **A. Sharma**, O. Grundmann, C.R. McCurdy, Kratom alkaloids: A blueprint? **ACS Chem Neurosci** 2023, DOI: 10.1021/acscchemneuro.2c00704
6. **A. Sharma**, C.R. McCurdy, Assessing the therapeutic potential and toxicity of *Mitragyna speciosa* in opioid use disorder. **Expert Opin Drug Metab Toxicol** 2020, 17, 255-257.
7. Y. Malik, S. Jaiswal, **A. Sharma**, M. Shukla, J. Lal. Role of enterohepatic recirculation in drug disposition: cooperation and complications. **Drug Metab Rev** 2016; 48: 281-327.

8. M. Shukla, **A. Sharma**, S. Jaiswal and J. Lal. Insights into the pharmacokinetic properties of antitubercular drugs. *Expert Opin Drug Metab Toxicol* 2016; 12: 765-778.
9. **A. Sharma**, S. Jaiswal, M. Shukla and J. Lal. Dried blood spots: Concepts, present status, and future perspectives in bioanalysis. *Drug Test Anal* 2014; 6: 399-414.
10. S. Jaiswal, **A. Sharma**, M. Shukla, V. Kalpesh, R. Nagarjun, J. Lal. Novel pre-clinical methodologies for pharmacokinetic drug-drug interaction studies: spotlight on 'humanized' animal models. *Drug Metab Rev* 2014; 46: 475-493.
11. R. Nagarjun, V. Kalpesh, S. Jaiswal, **A. Sharma**, M. Shukla, J. Lal. Do blood sampling sites affect pharmacokinetics? *Chem Biol Interface* 2014; 4: 176-191.

Book Chapters

1. T. Hiranita, S. Obeng, **A. Sharma**, J.L. Wilkerson, C.R. McCurdy, L.R. McMahon. *In vitro* and *in vivo* pharmacology of kratom, Advances in Pharmacology, Academic Press, 2021, ISSN 1054-3589, DOI: 10.1016/bs.apha.2021.10.001
2. J. Lal, **A. Sharma**, S. Jaiswal. *Carbamazepine Pharmacokinetic and Drug Interactions in Poly-Treated Patients* in Luca Gallelli (ed.) Carbamazepine: Medical uses, pharmacokinetics and adverse effects. Nova Scientific Publishers, Inc., New York, USA; 2013, p.1-32.

Published Abstracts

1. S. Zequeira, E. Gazarov, A.A. Güvenli, J. Seedansingh, E.C. Berthold, A. Senetra, **A. Sharma**, C.R. McCurdy, B. Setlow, J.L. Bizon. Chronic oral administration of delta-9-tetrahydrocannabinol (THC) enhances working memory in aged but not young rats. *Med Cannabis Cannabinoids* 2023;6:3. DOI: 10.1159/000534044
2. A. Brice-Tutt, W. Malphurs, A. Behnood-Rod, C. Kramer, A. Senetra, R.M. Caudle, M. Febo, A.W. Bruijnzeel, **A. Sharma**, B. Setlow, N.P. Murphy, J.K. Neubert. Evaluation of cannabidiol effects on oxycodone-induced analgesia and reward-related behaviors in rats. *Med Cannabis Cannabinoids* 2023;6:11. DOI: 10.1159/000534044
3. E. Gazarov, S. Zequeira, A.S. Senetra, B. McCracken, J. Howard, A. Sharma, C.R. McCurdy, J. Lewis, J.L. Bizon, B. Setlow. Effects of cannabis smoke exposure in young and aged mice. *Med Cannabis Cannabinoids* 2023;6:14. DOI: 10.1159/000534044
4. E. Gazarov, S. Zequeira, A.S. Senetra, B. McCracken, J. Howard, A. Sharma, C.R. McCurdy, J. Lewis, J.L. Bizon, B. Setlow. Effects of cannabis smoke exposure in young and aged mice. *Med Cannabis Cannabinoids* 2023;6:19. DOI: 10.1159/000534044
5. A. Senetra, M.A. Kuntz, S.R.R. Kanumuri, Y. Chiang, A.C. Brice-Tutt, N.P. Murphy, A.W. Bruijnzee, M. Febo, B. Setlow, J.K. Neubert, C. R. McCurdy, **A. Sharma**. Pharmacokinetic interactions of cannabidiol and oxycodone after oral administration in rats. *Med Cannabis Cannabinoids* 2023;6:1–23. DOI: 10.1159/000534044
6. T. Hiranita, **A. Sharma**, F.L. Oyola, S. Obeng, M.E. Reeves, L.F. Restrepo, A. Patel, M. Behnke, N.P. Ho, N.R. Williamson, L.R. Jimenez. Potential Contribution of 7-hydroxymitragynine, a metabolite of the primary kratom (*Mitragyna speciosa*) alkaloid mitragynine, to the μ -opioid activity of mitragynine in rats. *The FASEB Journal* 2020; 34(S1):1.

7. W.C. Hong, **A. Sharma**, T. Hiranita, B.A. Avery, C.R. McCurdy. Potential biochemical mechanisms of the dual sigma-1 and dopamine transporter ligand CM699. **The FASEB Journal** 2020; 34(S1): 1.
8. S. Parmar, V.K. Singh, S.K. Dwivedi, A.K. Nigam and **A. Sharma**. Synthesis and biological evaluation of novel pyrazoles incorporating a 4-amino-benzenesulfonamide moiety. **Med Chem Res** 2010; 19: S124-125.

Contribution to Academic Conferences/Webinar (Selected)

1. Speaker, "Pharmacokinetics and Pharmacodynamics of Mitragynine During Pregnancy for International Kratom" for 3rd International Kratom Symposium, Orlando, FL (Feb 13, 2024)
2. Invited Speaker, "AAPS Communities and Opportunities: Insights from AAPS Members in Industry and Academia" for Texas Tech University Health Science Center and University of Florida Student Chapters-American Association of Pharmaceutical Scientists (AAPS) (Nov 14, 2023)
3. Speaker, Status of Pharmacokinetics, Pharmacodynamics, & Drug Metabolism Community at American Association of Pharmaceutical Scientists (AAPS)-PharmSci 360 Annual Meeting, Orlando, FL (Oct 24, 2023)
4. Moderator, Speaker Spotlight: analytical testing access and capabilities low-income and middle-income countries at American Association of Pharmaceutical Scientists (AAPS)-PharmSci 360 Annual Meeting, Orlando, FL (Oct 24, 2023)
5. Keynote speaker "Pharmacokinetics based approach for the formulation development of complex natural products" at the international conference on Drug Discovery, Design and Delivery Approaches organized by Guru Nanak College of Pharmaceutical Sciences and Kingston Imperial Institute of Technology and Sciences, Dehradun, India (Nov 26, 2022)
6. Invited speaker "Pharmacokinetic-Pharmacodynamic modeling of the antinociceptive effect of mitragynine, the most abundant kratom alkaloid in mice" for American Association of Pharmaceutical Scientists (AAPS)-PharmSci 360, Boston, MA (Oct 18, 2022)
7. Invited speaker "Opioid receptor partial agonists as novel treatment approaches & formulations for pain" for American College of Clinical Pharmacology (ACCP) Trends in Drug Development Seminar, ACCP Annual Meeting, Bethesda, MD (Sep 24, 2022)
8. Invited speaker "PhD and career opportunities in pharmaceutical sciences" for Creighton University Student Chapter-American Association of Pharmaceutical Scientists (AAPS) (Jul 20, 2022)
9. Presented poster "Oxidative metabolite of mitragynine, 7-hydroxymitragynine, is not solely responsible for the antinociceptive effects of mitragynine in mice: A systemic PK-PD study" at Virtual Third Annual NIH HEAL Initiative Investigator Meeting (Apr 11, 2022)
10. Invited speaker "Use of traditional medicines in Indian subcontinent" during APhA-IPSF Humanitarian International Fair (Dec 1, 2021)
11. Invited speaker "A PK-PD model to understand the antinociceptive effects of mitragynine and contribution of its active metabolite, 7-hydroxymitragynine" organized by IFTM Alumni Association, IFTM University, Moradabad, India (Nov 24, 2021)
12. Invited speaker "Contribution of 7-hydroxymitragynine to the antinociceptive effects of mitragynine in mice" during the panel session "Emerging Science on Kratom - Safe or Dangerous?" organized by American Kratom Association (Nov 8, 2021)

13. Invited speaker (international webinar) "Pharmacokinetic methodologies for the systemic development of traditional herbal products" at FDP on Research Methodology and Data Analytics organized by Uttaranchal Institute of Pharmaceutical Sciences, Uttaranchal University, Dehradun, India (July 17, 2021)
14. Invited speaker (international webinar) "Pre-clinical pharmacokinetic studies and their role in drug discovery" organized by Galgotias University, Greater Noida, India (Jan 09, 2021)
15. Speaker "Kratom–Potential drug of abuse or useful analgesic without opioid-like side-effects?" during the panel session at the Winter Conference on Brain Research, Big Sky, MT, USA (Jan 26, 2020)
16. Presented poster "A Semi Mechanistic Pharmacokinetic Model to Understand the Metabolic Conversion of Mitragynine to 7-Hydroxymitragynine" at the Winter Conference on Brain Research, Big Sky, MT, USA (Jan 27, 2020)
17. Presented poster "Rapid UPLC-MS/MS Method for Simultaneous Quantification of Kratom Alkaloids in *Mitragyna speciosa* Products" at AAPS PharmSci 360, San Antonio, TX, US (Nov 5, 2019)
18. Invited speaker (international webinar) "Role of pharmacokinetics in drug development process of complex natural products" organized by IIMT University, Meerut, India (June 20, 2020)
19. Invited speaker "Kratom Alkaloidal Composition: Traditional Malaysian Preparation versus Commercial Products in the United States" at the 4th Annual Chemistry & Pharmacology of Drug Abuse Conference organized by Northeastern University, Boston, MA, USA (Aug, 2, 2019)
20. Invited speaker "Characterization of ADME Properties of Mitragynine, the Major Alkaloid of *Mitragyna speciosa* (kratom)" at UF Drug Discovery Symposium organized by University of Florida College of Pharmacy Center for Natural Products, Drug Discovery and Development, Gainesville FL, USA (April 26, 2019)
21. Invited speaker "Pharmacokinetics of Mitragynine and its Translational Implications" at Fostering Interdisciplinary Research in Medicines International Conference organized by the University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur, India (Jan 21, 2019)
22. Presented poster "Effect of Route of Administration of Mitragynine on the Systemic Exposure of Potent Metabolite, 7-Hydroxymitragynine" at AAPS PharmSci 360, Washington, DC, USA (Nov 6, 2018)
23. Presented poster "Suspected Adulteration of Commercial Kratom Products with 7-Hydroxymitragynine" at Behavior, Biology, and Chemistry: Translational Research in Addiction Meeting, San Antonio, TX, USA (**Travel Award**) (March 3, 2018)
24. Presented poster "Preclinical Pharmacokinetics of a Selective Sigma-2 Receptor Antagonist, CM398, in Rats" at AAPS Annual Meeting and Exposition, San Diego, CA, USA (Nov 14, 2017)
25. Presented poster "Pharmacokinetic Evaluation of Nicotinamide Riboside in Rats" at AAPS Annual Meeting and Exposition, Denver, CO, USA (Nov 14, 2016)
26. Presented poster "Comparative *In Vitro* and *In Vivo* Pharmacokinetic Evaluation of Natural Product Inspired Quinazolinone Antileishmanials" at AAPS Annual Meeting and Exposition, Denver, CO, USA (Nov 14, 2016)

27. Presented poster “Functional Role of P-Glycoprotein Mediated Transport on the Pharmacokinetics of Mitragynine”. UMMC Neuroscience Day, University of Mississippi Medical Center, Jackson, MS, USA (April 8, 2016)
28. Presented poster “Comparative *In Vitro* and *In Vivo* Pharmacokinetic Evaluation of Novel 4-aminoquinoline-tetrazole Antimalarials” at Drug Discovery and Development Colloquium, The University of Mississippi, Oxford, MS, USA (June 24, 2015)
29. Presented poster “Population Pharmacokinetics of Ormeloxifene in Female Volunteers Using NONMEM” at UPSS, Uppsala University, Uppsala, Sweden (**Novartis Travel Award**) (Aug 7, 2014)

GRANT ACTIVITY

Ongoing Research Support

R21DA055908

Sharma, Abhisheak (PI), Wilkerson, Jenny (MPI)
NIH-NIDA

03/15/2023- 02/28/2025

Kratom Alkaloid Exposure During Pregnancy

The overall goal of this study is to establish a direct relationship between kratom (*Mitragyna speciosa*) intake during pregnancy and its consequences on newborns.

Role: PI

1R01AG072714-01A1

Setlow, Barry (PI)
NIH-National Institute on Aging

08/15/2021 – 05/21/2026

Effects of cannabis on age-related cognitive decline and Alzheimer’s disease pathology

The overall goal of this study is to identify the effects of cannabis on the age-related cognitive decline and Alzheimer’s disease pathology, and to determine the mechanisms of such effects.

Role: Co-I

R01 DA049470-01A1

Neubert, John (PI)
NIH-National Institute of Drug Abuse

9/1/2020 – 08/31/2025

Opioid and cannabinoid interactions in pain and reward

The overall goal of this study is to develop novel approaches for chronic pain treatment that maximize analgesic efficacy while minimizing abuse liability. Combinations of cannabidiol with the commonly prescribed opioid analgesics will be evaluated for both chronic pain and self-administration.

Role: Co-I

R01 DA047855-01

McCurdy, Christopher (PI); McMahon, Lance (MPI)
NIH-National Institute of Drug Abuse

04/15/2019–02/29/2024

Kratom alkaloids: In vitro and in vivo pharmacological mechanisms

The major goals of this project are to identify the pharmacological mechanisms by which kratom alkaloids interact to produce abuse- and dependence-related effects in rats.

Role: Co-I

UH3 DA048353-01

McCurdy, Christopher (PI); McMahon, Lance (MPI)

09/01/2018 – 08/31/2024

NIH-National Institute of Drug Abuse

Opioid use disorders: UF Pharmacy medications discovery and development

The aim of this grant is to determine the *in vitro* and *in vivo* pharmacological mechanisms of alkaloids contained in the plant *Mitragyna speciosa*, to include binding, efficacy, stability, ADME, and behavioral/physiological effects.

Role: Co-I

BC200100P1

Zheng, Guangrong (PI)

01/01/2021 – 12/31/2023

US Army Medical Reserve Acquisition

Developing a novel PROTAC-based NR4A1 degrader for breast-cancer therapy

The aim of this grant is to design PROTAC NR4A1 degraders that can simultaneously target breast cancer cells, Tregs, and exhausted CD8 T cells for efficient tumor elimination.

Completed Research Support

21A11

Setlow, Barry (PI)

03/01/2021 – 02/28/2023

Ed and Ethel Moore Alzheimer's Disease Research Program Florida Department of Health

Effects of cannabis on Alzheimer's disease-related pathology and cognitive decline

The overall goal of this study is to characterize the rodent models to determine how chronic cannabis affects development of Alzheimer's disease-relevant pathology and age-related cognitive decline.

Role: Co-I

UF-Moonshot Alleviating Pain, Suffering and Addiction Pilot Award

Sharma, Abhisheak (PI)

07/01/2020 – 12/31/2020

University of Florida

Pharmacokinetics of complex natural products

This study is to determine the *in vitro* and *in vivo* pharmacokinetics of cannabinoids, kavalactones, and kratom alkaloids when dosed individually versus concurrently.

Role: PI

ICMR 45/57/2010/PHA/BMS

Lal, Jawahar (Supervisor)

01/11/2011 – 08/05/15

Extramural Funding, Indian Council of Medical Research (ICMR)

Interaction studies of concurrently co-administered clinically important drugs on the pharmacokinetic and pharmacodynamic profile of centchroman

The scope of this project was to perform pharmacokinetic and pharmacodynamic drug-drug interaction studies of centchroman with other classes of clinically relevant drugs to reduce contraception failure due to impairment in contraceptive efficacy.

Role: PI

R61 AT009988

Xing, Chengguo (PI); Mathews, Carol A (MPI)

09/01/2019 – 08/31/2021

NIH-National Center for Complementary and Integrative Health

A phased clinical trial of a dietary supplement kava: biomarker changes and anxiolytic effects

The overall goal of this study is to identify and validate potential biomarkers of kava's anxiolytic effect, and to demonstrate the safety and effectiveness of kava in treating GAD.

Role: Co-I

UFHCC Pilot Project Grant Program

Law, Brian (PI), Castellano, Ronald (MPI), Avery, Bonnie (MPI) 03/01/2018 – 02/28/2020

On the TRAIL of a proteostatic KILLER of EGFR+ and HER2+ breast tumors

The goals of this collaborative, multidisciplinary project are to 1) synthesize DDAs with enhanced potency and efficacy (Castellano laboratory), 2) validate a key role for the cancer-specific TRAIL/DR5 cell death pathway in DDA anticancer actions (Law Laboratory), and 3) select DDAs with suitable pharmacokinetic properties for an Investigational New Drug (IND) application.

Role: Research Assistant Professor

Private Contract, ChromaDex

Avery, Bonnie (PI)

07/01/2015 – 01/06/2016

Method development and validation of nicotinamide riboside and metabolites in plasma

The scope of the project was to develop and validate a UPLC-MS/MS method to quantitate nicotinamide riboside and its four specific metabolites. During this project an ultra performance liquid chromatography mass spectroscopy (UPLC-MS/MS) method was developed and validated for the quantification of nicotinamide riboside and its metabolites (NAD⁺, 1-methylnicotinamide, nicotinamide and 2-PY). This validated method will be used to quantitate the analytes during a clinical trial.

Role: Others (Postdoc)

Private Contract, ChromaDex

Avery, Bonnie (PI)

07/01/2015 – 01/06/2016

Analysis of N-methylnicotinamide and nicotinamide in rat plasma samples

The scope of this project was to perform method development and validation for the quantitative analysis of N-methylnicotinamide and nicotinamide in rat plasma. After validation, method was applied for quantitative analysis of N-methylnicotinamide and nicotinamide in plasma samples of a toxicokinetic study in rats.

Role: Others (Postdoc)

PROFESSIONAL DEVELOPMENT (SELECTED)

- Statistical Concepts for Clinical Research organized held at National AIDS Research Institute (ICMR), Pune, India (December 2012) (**Travel Award**).
- Data Analysis Using NONMEM organized by Population Approach Group in India (PAGIN) held at PSGIMSR, Coimbatore, India (August 2013).
- PK/PD Workshop Using Phoenix-WinNonlin, NLME and IVIVC organized by Pharmacokinetics & Metabolism Division, CSIR-CDRI, Lucknow, India (December 2013).
- QTRAP Application Training on Lightsight & Metabolite Identification on Qtrap 5500 LC-MS/MS system” organized by AB Sciex India held at CDRI, Lucknow, India (September 2013).
- Concepts and Application of Pharmacokinetics and Pharmacodynamic Modeling” organized by Department of Pharmaceutics, Indian Institute of Technology- BHU, Varanasi, India (September 2013).
- **Post-Graduate Course in Hands-on Tablet Technology** (2016) from the Department of Pharmaceutics & Drug Delivery, School of Pharmacy, The University of Mississippi, University, MS, USA
- **Leadership in Action** Summer Workshop organized by Center for Leadership and Service, UF Health, Gainesville, FL (June 2018)
- GastroPlus™ PBPK Modeling & Simulation Workshop: From Lead Optimization to Clinical Development held at University of Florida, Orlando, FL (October 2018)
- **PHA6935**: Translational Clinical Pharmacology, Spring 2017 (Auditor)

- **PHA6418:** Applied QSP & EPD, Fall 2017 (Auditor)
- **PHA6131:** Pharmacometrics and Systems Pharmacology, Fall 2018 (Auditor)
- **PHA6125:** Pharmacokinetics & Biopharmaceutics, Spring 2018 (Auditor)
- **First Year Faculty Teaching Academy** (Fall 2019, Score 100%)

I hereby declare that all the information furnished above is true to the best of my knowledge and belief.

Date: March 1, 2024

Abhisheak Sharma