

Dr. ASHISH DOGRA

Preclinical Research| Pharmacokinetics| Drug metabolism | Drug-induced toxicities

Biomedical researcher with more than 7 years of experience, working in preclinical pharmacology.



SKILL SUMMARY

Technical Skills	Computational Skills	Soft Skills
<ul style="list-style-type: none">✓ LC-MS/MS, HRMS, HPLC✓ Western blotting✓ ELISA✓ Rt-PCR✓ Histopathology & SEM✓ Spectrometry✓ Biochemistry✓ Haematology	<ul style="list-style-type: none">✓ GraphPad-Prism✓ Chem-Bio draw✓ Adobe-Photoshop✓ MS Office✓ WinNonLin	<ul style="list-style-type: none">✓ Communication✓ Meeting Deadlines✓ Teamwork✓ Organizational Skills

WORK PROFILE

Assistant Professor	From 25-09-2023 to continue	Department of Zoology, SRT Campus, Hemvati Nandan Bahuguna Garhwal University, Badshahithaul, Chamba, Uttarakhand
Postdoctoral Associate	From 14-11-2022 to 22-09-2023	Department of Pathology and Immunology, Baylor College of Medicine (BCM), Houston, Texas, USA
Senior Project Associate	From 10-06-2021 to 09-06-2022	PK-PD Toxicology Division, CSIR- Indian Institute of Integrative Medicine, Jammu, J&K, India
Research Fellow	From 23-08-2016 To 09-06-2021	

EDUCATION

Degree	Year	University/College	Subjects
Ph.D.	2022	CSIR-Indian Institute of Integrative Medicine, Jammu, J&K	Pharmacokinetics & Toxicology
M.Sc.	2015	Guru Nanak Dev University, Amritsar, Punjab	Zoology (Hons.)
B.Sc.	2013	University of Jammu, Jammu, J&K	English, Zoology, Chemistry, Biotechnology

KEYWORDS

Pharmacokinetics, Drug metabolism, Drug-Induced Toxicities (Hepatotoxicity, Cardiotoxicity, Nephrotoxicity, Lung injury), Inflammation (Arthritis), Metabolite identifications, Metabolomics, Disease-state pharmacokinetics, Herb-Drug interactions, Toxicity studies (OECD), Natural products.

Ph.D. Work

Ph.D. Title:

Exploring the role of plant-based natural products on pharmacokinetic modulation of drugs for augmented efficacy & better tolerability

Supervisor:
Dr. Utpal Nandi

Division:
PK-PD Toxicology Division

Tenure:
23-08-2016 To 08-06-2022

Chapter 1 (Diclofenac + Rutin)

This chapter deals with the effect of **rutin** on pharmacokinetics, pharmacodynamics, and toxicities of **diclofenac**. Results suggest that rutin significantly augmented diclofenac's anti-inflammatory and anti-nociceptive activities in rats using the carrageenan-induced paw edema model and acetic acid-induced writhing model, respectively. Further, rutin substantially enhance the oral bioavailability of diclofenac upon single-dose administration in rats. It may be linked to the inhibition of BCRP transporters and the CYP2C9 enzyme that increases the permeability and delays the metabolism of diclofenac, respectively. However, rutin upon multiple-dose administration revealed a minimal effect on the oral exposure of diclofenac compared to the rutin's single-dose administration which may be correlated to alterations in the mRNA expression level of CYP2C11 (CYP2C9) upon multiple-dose administration of rutin compared to its single-dose administration. We also developed diclofenac-induced cardiac injury model in Wistar rats. Results showed that rutin improved cardiac injury markers, reduced oxidative stress, inhibited inflammation, and lowered apoptosis to elicit a cardioprotective effect supported by histopathological and S.E.M findings. Additionally, rutin showed the protective effects against diclofenac-induced alterations in the stomach and liver by improving the critical injury markers, preventing histopathological changes, and shielding the normal tissue surface architecture.

Chapter 2 (Methotrexate + Glabridin)

This chapter deals with the effect of **glabridin** on the pharmacokinetics, pharmacodynamics, and toxicities of **methotrexate**. Results suggest that glabridin could exhibit a hepatoprotective effect against the MTX-induced liver injury in the mice model by reducing the oxidative stress via activating the Nrf2 pathway, inhibiting inflammation via hindering the NF- κ B pathway, and retarding BAX-mediated apoptosis. These effects further supported by the histopathological and S.E.M observations. Further, glabridin augmented the anti-arthritic efficacy of methotrexate by inhibiting the inflammatory cytokines and preventing the joint architecture deterioration in rats using the Mycobacterium-induced arthritis model. Additionally, concomitant glabridin administration lessened the hepatotoxic effect of methotrexate therapy by lowering oxidative stress via activating the Nrf2 pathway. Moreover, glabridin showed a minor effect on the pharmacokinetics of methotrexate in the rat model to precipitate any severe drug interactions. The absence of potential pharmacokinetic interaction with enhanced anti-arthritic effect of methotrexate upon simultaneous administration with glabridin demonstrates that glabridin itself aids the anti-arthritic efficacy of methotrexate. In conclusion, both rutin and glabridin are found to be the promising candidates for improving the efficacy and reducing the dose-related toxicities of diclofenac and MTX, respectively, based on the preclinical investigations.

RESEARCH OUTPUT (First author: * & Corresponding author: #)

1. Development of Mupirocin-Impregnated Bacterial Cellulosic Transdermal Patches for the Management of Skin Infection. Rahul Bhat, **Ashish Dogra***, Shifali Chib, Manoj Kumar, Inshad Ali Khan*, Utpal Nandi*, and Saurabh Saran*. **ACS Omega** (2024). DOI: 10.1021/acsomega.3c07174
2. Phytotherapeutic Potential of Rutin Against Xenobiotic-Induced Toxicities in Preclinical Models. **Ashish Dogra*#**. **Food Reviews International** (2023), 18, 1-24. DOI: 10.1080/87559129.2023.2279623
3. Small-molecule chemical probes for the potential therapeutic targets in alcoholic liver diseases ☆. **Ashish Dogra***, Feng Li. **Liver Research** (2023), 7(13), 177-188. DOI: 10.1016/j.livres.2023.09.001
4. Glabridin plays dual action to augment the efficacy and attenuate the hepatotoxicity of methotrexate in arthritic rats. **Ashish Dogra***, Dilpreet Kour, Mahir Bhardwaj, Sumit Dhiman, Amit Kumar, Bhavna Vij, Ajay Kumar, and Utpal Nandi. **ACS Omega** (2022), 7, 34341-34351. DOI: 10.1021/acsomega.2c03948
5. Ameliorating effect of rutin against diclofenac-induced cardiac injury in rats with underlying function of FABP3, MYL3, and ANP. **Ashish Dogra*#**, Dilpreet Kour, Abhishek Gour, Mahir Bhardwaj, Swarnendu Bag, Shakti Kumar Dhiman, Ajay Kumar, Gurdarshan Singh, Utpal Nandi. **Drug and Chemical Toxicology** (2022), 46 (3), 597-608. DOI: 10.1080/01480545.2022.2069804.
6. Glabridin ameliorates methotrexate-induced liver injury via attenuation of oxidative stress, inflammation, and apoptosis. **Ashish Dogra***, Divya Gupta, Swarnendu Bag, Irfan Ahmed, Shipra Bhatt, Ekta Nehra, Shakti Dhiman, Amit Kumar, Gurdarshan Singh, Sheikh Tasduq Abdullah, Payare Lal Sangwan, Utpal Nandi. **Life Sciences** (2021), 278, 119583. DOI: 10.1016/j.lfs.2021.119583
7. Effect of disease state on the pharmacokinetics of bedaquiline in renal-impaired and diabetic rats. Abhishek Gour, **Ashish Dogra***, Sumit Sharma, Priya Wazir, Utpal Nandi. **ACS Omega** (2021), 6, 6934-6941. DOI: 10.1021/acsomega.0c06165
8. Effect of rutin on pharmacokinetic modulation of diclofenac in rats. **Ashish Dogra***, Abhishek Gour, Shipra Bhatt, Priyanka Sharma, Anjna Sharma, Pankul Kotwal, Priya Wazir, Prashant Mishra, Gurdarshan Singh, Utpal Nandi. **Xenobiotica** (2020), 50, 1332-1340. DOI: 10.1080/00498254.2020.1773008
9. Description of druglike properties of safranal and its chemistry behind low oral exposure. **Ashish Dogra***, Pankul Kotwal, Abhishek Gour, Shipra Bhatt, Gurdarshan Singh, Debaraj Mukherjee, Utpal Nandi. **ACS Omega** (2020), 5, 9885-9891. DOI: 10.1021/acsomega.0c00160
10. Intervention of curcumin on oral pharmacokinetics of daclatasvir in rat: A possible risk for long-term use. **Ashish Dogra***, Shipra Bhatt, Asmita Magotra, Anjna Sharma, Pankul Kotwal, Abhishek Gour, Priya Wazir, Gurdarshan Singh, Utpal Nandi. **Phytotherapy Research** (2018), 32, 1967-1974. DOI: 10.1002/ptr.6123
11. AD Hudwekar, Pankul Kotwal, MI Dar, Shilpi Balgotra, **Ashish Dogra**, Jaspreet Kour, SS Chobe, Utpal Nandi, S Syed Hussain, SD Sawant. Pyrazolopyrimidinone Based Selective Inhibitors of PDE5 for the Treatment of Erectile Dysfunction. **Chemistry & Biodiversity** (2023), 20(4), e202200707. DOI: 10.1002/cbdv.202200707
12. Ayurveda-based phytochemical composition attenuates lung inflammation and precipitates pharmacokinetic interaction with favipiravir: an in vivo investigation using disease-state of acute lung injury. Abhishek Gour, **Ashish Dogra**, Mahendra K. Verma, Mahir Bhardwaj, Dilpreet Kour, Ashiya

- Jamwal, Bapi Gorain, Mukesh Kumar, Bhavna Vij, Ajay Kumar, and Utpal Nandi. **Natural Product Research (2022)**, 1-8. Doi: 10.1080/14786419.2022.2150620.
13. Epicatechin exerts dual action to shield sickling and hydroxyurea-induced myelosuppression: Implication in sickle cell anemia management. Abhishek Gour, Dilpreet Kour, **Ashish Dogra**, Diksha Manhas, Priya Wazir, Sanjeev Kumar Digra, Ajay Kumar, Utpal Nandi. **Toxicology and Applied Pharmacology (2022)**, 49, 116113. DOI: 10.1016/j.taap.2022.116113
 14. Investigating the potential use of andrographolide as a coadjuvant in sickle cell anemia therapy. Abhishek Gour, Pankul Kotwal, **Ashish Dogra**, Dilpreet Kour, Sumit Dhiman, Amit Kumar, Sanjeev Kumar Digra, Ajay Kumar, Gurdarshan Singh, Utpal Nandi. **ACS Omega (2022)**, 7, 12765-12771. DOI: 10.1021/acsomega.1c07339
 15. Effect of myricetin on CYP2C8 inhibition to assess the likelihood of drug interaction using in silico, in vitro, and in vivo approaches. Shipra Bhatt, Diksha Manhas, Vinay Kumar, Abhishek Gour, Kuhu Sharma, **Ashish Dogra**, Probir Kumar Ojha, Utpal Nandi. **ACS Omega (2022)**, 7, 13260-13269. DOI: 10.1021/acsomega.2c00726
 16. Effect of Concomitant Hydroxyurea Therapy with Rutin and Gallic Acid: Integration of Pharmacokinetic and Pharmacodynamic Approaches. Abhishek Gour, **Ashish Dogra**, Dilpreet Kour, Gurdarshan Singh, Ajay Kumar, Utpal Nandi. **ACS Omega (2021)**, 6, 14542–14550. DOI: 10.1021/acsomega.1c01518
 17. Glabridin attenuates paracetamol-induced liver injury in mice via CYP2E1-mediated inhibition of oxidative stress. Shipra Bhatt, Ankita Sharma, **Ashish Dogra**, Priyanka Sharma, Amit Kumar, Pankul Kotwal, Swarnendu Bag, Prashant Misra, Gurdarshan Singh, Ajay Kumar, Payare Lal Sangwan, Utpal Nandi. **Drug and Chemical Toxicology (2021)**, 45, 2352-2360. DOI:10.1080/01480545.2021.195004
 18. Amalgamation of in-silico, in-vitro and in-vivo approach to establish glabridin as a potential CYP2E1 inhibitor. Shipra Bhatt, Vinay Kumar, **Ashish Dogra**, Probir Kumar Ojha, Priya Wazir, Payare Lal Sangwan, Gurdarshan Singh, Utpal Nandi. **Xenobiotica (2021)**, 51, 625-635. DOI: 10.1080/00498254.2021.1883769
 19. A highly sensitive UPLC-MS/MS method for hydroxyurea to assess pharmacokinetic intervention by phytotherapeutics in rats. Abhishek Gour, **Ashish Dogra**, Priya Wazir, Gurdarshan Singh, Utpal Nandi. **Journal of Chromatography B (2020)**, 1154, 122283. DOI: 10.1016/j.jchromb.2020.122283
 20. Crocetin promotes clearance of amyloid- β by inducing autophagy via the STK11/LKB1-mediated AMPK pathway. Abubakar Wani, Sweilem B. Al Rihani, Ankita Sharma, Brenna Weadick, Rajgopal Govindarajan, Sameer U. Khan, Parduman R. Sharma, **Ashish Dogra**, Utpal Nandi, Chilakala N Reddy, Sonali S Bharate, Gurdarshan Singh, Sandip B. Bharate, Ram A. Vishwakarma, Amal Kaddoumi, Ajay Kumar. **Autophagy (2020)**, 17, 1-20. DOI: 10.1080/15548627.2021.1872187
 21. Effect of natural phenolics on pharmacokinetic modulation of bedaquiline in rat to assess the likelihood of potential food–drug interaction. Pankul Kotwal, **Ashish Dogra**, Ankita Sharma, Shipra Bhatt, Abhishek Gour, Sumit Sharma, Priya Wazir, Parvinder Pal Singh, Ajay Kumar, Utpal Nandi. **Journal of Agricultural and Food Chemistry (2020)**, 68, 1257-1265. DOI: 10.1021/acs.jafc.9b06529
 22. Consistent production of kojic acid from *Aspergillus sojae* SSC-3 isolated from rice husk. Shifali Chib, **Ashish Dogra**, Utpal Nandi, Saurabh Saran. **Molecular Biology Reports (2019)**, 46, 5995-6002. DOI: 10.1007/s11033-019-05035-8

23. Effect of IS01957, a para-coumaric acid derivative on pharmacokinetic modulation of diclofenac through oral route for augmented efficacy. Anjna Sharma, Abhishek Gour, Shipra Bhatt, Santosh K. Rath, Tanveer A. Malik, **Ashish Dogra**, Payare L. Sangwan, Surinder Koul, Sheikh Tasduq Abdullah, Gurdarshan Singh, Utpal Nandi. **Drug Development Research (2019)**, 80, 948-957. DOI: 10.1002/ddr.21574
24. Assessment of preclinical drug interactions of bedaquiline by a highly sensitive LC-ESI-MS/MS based bioanalytical method. Pankul Kotwal, Asmita Magotra, **Ashish Dogra**, Sumit Sharma, Abhishek Gour, Shipra Bhatt, Priya Wazir, Parvinder Pal Singh, Gurdarshan Singh, Utpal Nandi. **Journal of Chromatography B (2019)**, 1112, 48-55. DOI: 10.1016/j.jchromb.2019.02.022
25. Potential herb-drug interaction of a flavone glycoside from Cuminum cyminum: Possible pathway for bioenhancement of rifampicin. Anjna Sharma, Asmita Magotra, Shipra Bhatt, **Ashish Dogra**, Priya Wazir, NK Satti, Gurdarshan Singh, Sachin S Bhusari, Utpal Nandi. **Indian Journal of Traditional Knowledge (2018)**, 17, 776-782.
26. Impact of concomitantly administered curcumin on pharmacokinetics of daclatasvir in mice under the frame of herb-drug interaction. Asmita Magotra, Pankul Kotwal, Shipra Bhatt, **Ashish Dogra**, Gurdarshan Singh, Utpal Nandi. **Indian Journal of Pharmaceutical Education and Research (2018)**, 52(4), 46-50. DOI: 10.5530/ijper.52.4s.70
27. Pharmacokinetics, pharmacodynamics, and safety profiling of IS01957, a preclinical candidate possessing dual activity against inflammation and nociception. Anjna Sharma, Asmita Magotra, **Ashish Dogra**, Santosh Kumar Rath, Sheikh Rayees, Priya Wazir, Sadhana Sharma, Payare Lal Sangwan, Surjeet Singh, Gurdarshan Singh, Utpal Nandi. **Regulatory Toxicology and Pharmacology (2017)**, 91, 216-225. DOI: 10.1016/j.yrtph.2017.10.033

LITERATURE REVIEWS

1. Liquid chromatography-based methods for analysis of disease-modifying antirheumatic drugs (DMARDs) in biological matrices. **Ashish Dogra***, Anjna Sharma, Uttam Kumar Mandal, Pankul Kotwal, Shipra Bhatt, Utpal Nandi. **Critical Reviews in Analytical Chemistry (2019)**, 49, 224-242. DOI: 10.1080/10408347.2018.1503943
2. **Ashish Dogra**, Uttam Kumar Mandal, Utpal Nandi. Pharmacognosy, Phytochemistry and Pharmacology of *Dysoxylum binectariferum*. “**Recent Progress in Medicinal Plants (RPMP)**” (2018), Chapter 14, Volume 49.
3. Abhishek Gour, **Ashish Dogra**, Utpal Nandi. Pharmacokinetic aspects of chromenes. “The Role of Chromenes in Drug Discovery and Development” (2023). DOI: 10.2174/9789815124330123010009
4. Abhishek Gour, **Ashish Dogra**, Utpal Nandi. Effect of natural products on improvement of blood pathophysiology for management of sickle cell anemia. “Botanical leads for drug discovery.” **Springer Nature (2020)**, Chapter 3. ISBN 978-981-15-5916-7. DOI: 10.1007/978-981-15-5917-4

PATENTS

1. Saurabh Saran, Manoj Kumar, Shifali Chib, Rahul Bhat, Utpal Nandi, **Ashish Dogra**, Inshad Ali Khan. Composition for Anti-Bacterial Cellulose Membranes Useful for Transdermal Drug Delivery and A Process for the Preparation Thereof. **06 April 2023. (International Number: WO 2023/053145 A1).**
2. F. Malik, N. Ahmed, S. Mir, S. Khan, S.U. Khan, M.A. Paddar, L.K. Anand, M.S. Maqbool, A. Kumar, A. Padala, G. Chashoo, U. Nandi, G. Singh, B.A. Shah, Qazi, B. Hamza, K. Fatim, N. Nazir, **Ashish Dogra**, A. Kumar, G. Yadav. Amino Acid-containing imidazoles as potential stem cell modulator useful against paclitaxel resistant triple negative breast cancer. **2021. NF No. 0077NF2021.**

CONFERENCES AND WORKSHOPS

1. Poster presentation on “Improved oral pharmacokinetics of diclofenac upon pretreatment with quercetin” in the **International Conference** on Applied Biology (**ICAB-2019**) & First Annual Convention of the Society of Biologists at Shri Mata Vaishno Devi University, Katra, J&K, India, November **2019**.
2. Poster presentation on “Involvement of BCRP transporters and CYP2C9 isoenzymes towards augmented efficacy of diclofenac in the presence of quercetin” in the **14th Science Congress** (A National event on the Theme Science and Technology for the Sustainable Future) at University of Jammu, Jammu, J&K, India, December **2019**.
3. Poster presentation on “Role of natural product on the plasma concentration of a recently approved oral anti-HCV drug” in the **International Conference** on “Pharmacology for Future: Towards Translational Approach for Next Generation Pharmacologists” (**ICPDDP-2018**) at Maharaja Agrasen University, Baddi, HP, India **2018**.
4. Poster presentation on “Impact of citrus flavonoids on teriflunomide pharmacokinetics to assess possible risk” in **National level Seminar** on “**Science & Technology for the unreached: Notions, values and applicability**” at Govt. Degree College, Samba, J&K, India, April **2018**.
5. Participated in the **National Conference** cum Industry-Academia meet (**IAMF-2018**) on “Opportunities and Challenges in Fermentation Based Industrial Processes” at CSIR-IIIM, Jammu, J&K, India, September **2018**.
6. Attended 4 days of **TSQ Endura LCMS/MS** operation and Application training at CSIR-IIIM, Jammu, in April **2018**.

FELLOWSHIP AWARD/PRIZE

1. Qualified for the **CSIR-UGC NET JRF 2015** and **2016** with a percentile score of 51 and 45 to avail of both UGC and CSIR fellowships respectively.
2. Qualified for the Graduate Aptitude Test in Engineering (**GATE**) **2016** with a GATE score of 280.
3. Qualified for the J&K State Eligibility Test (**JKSET**) in Life Sciences **2016**.
4. **2nd Best Poster award** in ‘ICPDDP-2018’ at International Conference on “Pharmacology for Future: Towards Translational Approach for Next Generation Pharmacologists” at Maharaja Agrasen University, Baddi, HP, India **2018**.
5. **2nd Best Research Paper award** at the 81st IIIM Foundation Day at CSIR-IIIM, Jammu, J&K, India **2021**.

EDITORIAL WORK

- ✓ **Editor** at reputed journals: Advances in Clinical Toxicology & Cardiac and Cardiovascular Research
- ✓ **Reviewer** at reputed journals: Phytotherapy Research, Life Sciences, Pharmaceutical Science Advances, Current Medicinal Chemistry, & Drug Metabolism, and Bioanalysis Letters.

PROFESSIONAL MEMBERSHIPS

- ✓ Member of Royal Society of Biology (**MRSB**) since 1st April 2023.