

Biodata



Dr. Ashish Dwivedi,
Ph.D., PGDIPR
Scientist D, Photobiology Division,
Systems Toxicology & Health Risk Assessment Group,
Assistant Professor,
Academy of Scientific and Innovative Research (AcSIR),
SERB-SIRE Fellow, Visiting Professor, MSU, USA,
GLP-Inspector, NGCMA, New Delhi
CSIR-Indian Institute of Toxicology Research,
Vishvigyan Bhawan, 31, Mahatma Gandhi Marg
P.O. Box No. 80, Lucknow - 226 001
Uttar Pradesh, India.
E-mail: -ashish.dwivedi1@iitr.res.in, rajnam84@gmail.com
Mobile No: +917897944888

Educational Qualification:

- **Master of Science:** 2005-2007: Biotechnology, Babasaheb Bhimrao Ambedkar Central University (BBAU), Lucknow, India.
- **Doctor of Philosophy:** 2008-2014: Department of Radiotherapy, KGM University, Lucknow and Indian Institute of Toxicology Research, Lucknow, India.
- **Post Graduate Diploma:** 2015: Intellectual Property Rights, IGNOU, New Delhi, India.

Position held:

- ❖ **2023- Present:** Scientist D, Photobiology Division, CSIR-Indian Institute of Toxicology Research, Lucknow, Uttar Pradesh, India.
- ❖ **2019- 2023:** Scientist C, Photobiology Division, CSIR-Indian Institute of Toxicology Research, Lucknow, Uttar Pradesh, India.
- ❖ **2018- 2019:** Post-Doctoral Fellow, Faculty of Biology, Israel Institute of Technology, Technion, Israel.
- ❖ **2017- 2018.** Research Associate, Colorado University, Anschutz Medical Campus, US
- ❖ **2015- 2017:** Dr. D.S. Kothari Post-Doctoral Fellow (UGC, New-Delhi), India.
- ❖ **August 2014-December 2014:** Assistant Professor, Department of Environmental Microbiology, Babasaheb Bhimrao Ambedkar Central University (BBAU), Lucknow, UP, India.

Area of Specialization:

- ❖ Photosensitization, Phototoxicity, Photoallergy, and Photocarcinogenicity

Current R&D/S&T Activities

- Development and regulatory validation of OECD-aligned integrated testing strategies (ITS) for the assessment of skin sensitization and skin allergy prediction of cosmetic ingredients, including essential oils, fragrances, preservatives, hair dyes, and colorants.
- Engineering advanced human-relevant 3D immunocompetent skin equivalent models integrated with molecular and cellular biomarkers for next-generation safety assessment of cosmetics and personal care products, supporting New Approach Methodologies (NAMs) and reducing reliance on animal testing.
- Elucidation of molecular and cellular mechanisms underlying UV radiation-induced skin damage, with

emphasis on oxidative stress, mitochondrial dysfunction, autophagy, and inflammatory signaling to identify novel therapeutic targets for skin disorders.

- Discovery and translational development of natural bioactive compounds and nanotherapeutics with photoprotective, anti-photoaging, and skin barrier-restorative properties, targeting UV-induced oxidative damage, premature skin aging, and skin sensitization.

Honors & Awards:

- Invitation as Guest of Honour in Inaugural function of Training on “Agarbatti, Dhoopbatti, Hawansamgri and Perfumery” on 04.08.2025, FFDC, Kannauj.
- Invitation as Special Guest and Rapporteur in XXVI FAFAI International Convention & Expo 2025 at New Delhi.
- Invitation as a Chief Guest in the Inaugural session of “Manufacturing of Agarbatti & Perfumery” for Master Trainers of KVIC at FFDC, Kannauj, 28th March, 2024.
- Special Invitee in Round Table meeting of World Bank on 24-25th August 2023, at Agartala
- Guest of honor for the valedictory session for the Hands-on Workshop on "Real-Time PCR - Gene Expression Analysis" Biotech Park, Lucknow on 12th March 2022.
- Dr. D.S Kothari Post-Doctoral Fellowship, UGC.
- Selected in 5th science conclave/INSPIRE Internship Program” A Congregation of Nobel Laureates and Eminent, AMHRD-DST, IIIT, Allahabad.
- CSIR-UGC SRF fellowship.
- CSIR-NET- JRF fellowship.
- Third prize in Hindi speech on the occasion of the Hindi week in IITR (CSIR) during 2009-2010, Lucknow.

Membership of Society:

- ❖ Membership of Association of Scientists of Indian Origin Society of Toxicology (ASIO), USA
- ❖ Full Membership of Society of Toxicology (SOT), USA
- ❖ Membership in Indian Photobiology Society, India
- ❖ Bureau of Indian Standards (Cosmetics Sectional Committee PCD 19), India

Book Published:

- ❖ Photocarcinogenesis & Photoprotection. **Springer Nature**, ISBN: 978-981-10-5492-1, 2018.
- ❖ Skin Aging & Cancer: Ambient UV-R Exposure. **Springer Nature**, ISBN: 978-981-13-2540-3, 2019.
- ❖ Advancement in the Pathophysiology of Cerebral Stroke. **Springer Nature**, ISBN: 978-981-13-6602-4, 2020.
- ❖ Skin Cancer: Pathogenesis and Diagnosis. **Springer Nature**, ISBN: 978-981-16-0363-1, 2021.
- ❖ Inflammation Resolution and Chronic Diseases. **Springer Nature**, ISBN: 978-981-97-0156-8, 2024.
- ❖ Hair Care Products: Efficacy, Safety and Global Regulation. **Springer Nature**, ISBN: 978-981-97-6739-7, 2024.
- ❖ Essential Oils and Fragrances in Cosmetics: Global Regulatory Practices and Compliance. **CRC Press/Taylor & Francis**, ISBN: 978-1032904801, 2025.
- ❖ Fragrance Regulatory Compliance: Compendium on Fragrance and Flavor. 2025. BioTox Solution

Book Chapters Published:

- संक्षेप प्रसारण में प्राकृतिक एवं शैक्षणिक सुगंध का प्रभाव. Vishvigyan Sandesh, Volume,36,2022.
- आनुवंशिक रूप से सिंथेटिक शिवा (जीएम) फसलें: भारत और विश्व की आवश्यकता, Vishvigyan

- त्वचा की प्रकाशिक सुरक्षा " स्किन एक स र्क मुद्दे से कह असिक", Vishvigyan Sandesh, Volume,34,2021.

List of Publications:

1. Kamar, M. D., Bala, M., Dwivedi, A., & Ray, R. S. (2026). Oxidative Stress-Mediated DNA Fragmentation Involved in STING-Dependent Apoptosis in Human Keratinocytes by 5-Amino-2-Methylphenol under Ambient UVB Exposure. *Archives of Toxicology*, **100**(6), 2517–2534. **I.F.: 10.9**
2. Vikram, A., Patel, S. K., Pathania, D., Srivastava, N., Rai, A. K., CH, R. S., ... & [Dwivedi, A.](#) (2025). Ferulic Acid Photoconversion Maintains Nrf2-Mediated Antioxidant Defense Against UVA Damage. *Phytomedicine*, 157616. **I.F 11.3**
3. Singh, S., Mourya, D., Patel, S. K., Shukla, S., Kumar, V., Kotian, S. Y., Yadav, A. K., Pandey, A., Dwivedi, A., & Tripathi, A. (2025). Photoprotective Efficacy of Sunset Yellow via Inhibition of Type-I and Type-II Pathway under Exposure of Sunlight. *Photochemistry and Photobiology*, 101(3), 550–564. **I.F.: 2.5**
4. Rana, P., Pathania, D., Gaur, P., Patel, S. K., Bajpai, M., Singh, N. T., Pandey, R., Shukla, S. V., Pant, A. B., Ray, R. S., & Dwivedi, A. (2025). Regulatory Frameworks for Fragrance Safety in Cosmetics: A Global Overview. *Toxicological Research*, **41**(3), 199–220. **I.F.: 3.2**
5. Prabhakar, P., Sen, R. K., Patel, M., Vishwakarma, J., Vikram, A., [Dwivedi, A.](#), ... & Dhand, C. (2025). Polydopamine-Functionalized Graphene Oxide Integrated PCL/Gelatin Nanofibers for Wound Infection Control. *Journal of Drug Delivery Science and Technology*, 107379. **I.F 5.2**
6. Prajapati, G., Patel, S. K., Mourya, D., Sinha, M., Kamar, M. D., Ray, R. S., & Dwivedi, A. (2025). Photosensitization and phototoxicity mechanism of diclofenac sodium (NSAID) under ambient UVR exposure. *Journal of Photochemistry and Photobiology B: Biology*, 113227. **I.F 3.7**
7. Shukla, P., Verma, P., Tiwari, V., Tripathi, A., Pandey, S., [Dwivedi, A.](#), & Mishra, A. (2025). Surfactant Mediated Dispersion and stabilization of nano-emulsion droplets enhance antimicrobial activity against multidrug resistant bacteria. *Journal of Molecular Liquids*, 426, 127300. **I.F 5.2**
8. Singh, S., Mourya, D., Patel, S. K., Shukla, S., Kumar, V., Kotian, S. Y., [Dwivedi, A.](#), & Tripathi, A. (2025). Photoprotective efficacy of Sunset Yellow via inhibition of type-I and type-II pathway under exposure of sunlight. *Photochemistry and Photobiology*, 101(3), 550-564. **I.F 2.5**
9. Patel, S. K., Vikram, A., Pathania, D., Chugh, R., Gaur, P., Prajapati, G., ... & [Dwivedi, A.](#) (2024). Allergic potential & molecular mechanism of skin sensitization of cinnamaldehyde under environmental UVB exposure. *Chemosphere*, 368, 143508. **I.F 8.1**
10. Vikram, A., Patel, S. K., Singh, A., Pathania, D., Ray, R. S., Upadhyay, A. K., & Dwivedi, A. (2024). Natural Autophagy Activators: A Promising Strategy for Combating Photoaging. *Phytomedicine*, 132, 155508. **I.F.: 11.3**
11. Giri, V. P., Pandey, S., Shukla, P., Gupta, S. C., Srivastava, M., Rao, C. V., ... [Dwivedi, A](#) & Mishra, A. (2024). Facile fabrication of sandalwood oil-based nanoemulsion to intensify the fatty acid composition in burned and rough skin. *ACS omega*, 9(6), 6305-6315. **I.F 4.3**
12. Sen, R. K., Prabhakar, P., Shruti, Verma, P., Vikram, A., Mishra, A., [Dwivedi, A.](#), Gowri, V.S., Chaurasia, J.P., Mondal, P.D., Srivastava, A.K., Dwivedi, N., & Dhand, C. (2024). Smart nanofibrous hydrogel wound dressings for dynamic infection diagnosis and control: soft but functionally rigid. *ACS Applied Bio Materials*, 7(2), 999-1016. **I.F 4.7**
13. Shukla, S., Chauhan, P., Gaur, P., Rana, P., Patel, S. K., Chopra, D., Vikram, A., Prajapati, G., Yadav, A.K., Kotian, S.Y., Bala, L., [Dwivedi, A.](#), & Mishra, A. (2024). Toxic potential

- assessment of hair dye developer 2, 4, 5, 6-tetraaminopyrimidine sulfate exposed under ambient UVB radiation. *Toxicology and Industrial Health*, 40(1-2), 1-8. **I.F 1.7**
14. Negi, S., Shukla, S., Patel, S. K., Vikram, A., Gaur, P., Kamar, M. D., S. K., Bala, L., Ray, R. S., & [Dwivedi, A.](#) (2023). Benzo (ghi) perylene (BgP) a black tattoo ingredient induced skin toxicity via direct and indirect mode of DNA damage under UVA irradiation. *Chemico-Biological Interactions*, 379, 110508. **I.F 5.4**
 15. Negi, S., Chopra, D., Shukla, S., Vikram, A., Patel, S. K., Bala, L., [Dwivedi, A.](#) & Ray, R. S. (2023). Involvement of type-1 pathway in phototoxicity of benzo [ghi] perylenean ingredient of tattoo ink at ambient exposure of UVR and sunlight. *Journal of Photochemistry and Photobiology B: Biology*, 244, 112700. **I.F 3.7**
 16. Mishra, A., Bhattacharya, A., Chauhan, P., Pandey, S., & [Dwivedi, A.](#) (2022). Phenotype microarray analysis reveals the biotransformation of *Fusarium oxysporum* f. sp. *lycopersici* influenced by *Bacillus subtilis* PBE-8 metabolites. *FEMS Microbiology Ecology*, 98(10), fiac102. **I.F 3.5**
 17. Chandra, S., Qureshi, S., Chopra, D., [Dwivedi, A.](#), & Ray, R. S. (2022). Involvement of type-I and type-II photodynamic reactions in photosensitization of fragrance ingredient 2-acetonaphthone. *Photochemistry and Photobiology*, 98(5), 1050-1058. **I.F 2.8**
 18. Shukla, S., Chopra, D., Patel, S. K., Negi, S., Srivastav, A. K., Ch, R., ... [Dwivedi, A.](#), & Ray, R. S. (2022). Superoxide anion radical induced phototoxicity of 2, 4, 5, 6-Tetraminopyrimidine sulfate via mitochondrial-mediated apoptosis in human skin keratinocytes at ambient UVR exposure. *Food and Chemical Toxicology*, 164, 112990. **I.F 3.5**
 19. Chauhan, P., Bhattacharya, A., Giri, V. P., Singh, S. P., Gupta, S. C., Verma, P., ... [Dwivedi, A.](#), & Mishra, A. (2022). *Bacillus subtilis* suppresses the charcoal rot disease by inducing defence responses and physiological attributes in soybean. *Archives of Microbiology*, 204(5), 266. **I.F 2.6**
 20. Sarika Yadav, [Ashish Dwivedi](#), and Anurag Tripathi (2022). Biology of macrophage fate decision: Implication in inflammatory disorders. *Cell Biology International*. **I.F 3.6**
 21. Saumya Shukla, Deepti Chopra, Sunil Kumar Patel, Sandeep Negi, [Ashish Dwivedi](#), and Ratan Singh Ray (2022). Superoxide anion radical-induced phototoxicity of 2,4,5,6-Tetraminopyrimidine sulfate via mitochondrial-mediated apoptosis in human skin keratinocytes at ambient UVR exposure. *Food and Chemical Toxicology*, Volume 164, June, 112990. **I.F 6.02**
 22. Sonam Chandra, Saba Qureshi, Deepti Chopra, [Ashish Dwivedi](#), Ratan Singh Ray (2022). Involvement of Type-I and Type-II Photodynamic Reactions in Photosensitization of Fragrance Ingredient 2-acetonaphthone. *Photochemistry & Photobiology*. **I.F 3.4**
 23. Priyanka Chauhan, Arpita Bhattacharya, Satyendra Pratap Singh, Sateesh Chandra Gupta, Pratibha Verma, [Ashish Dwivedi](#), Laxman Singh Rajput, Aradhana Mishra (2022). *Bacillus subtilis* suppresses the charcoal rot disease by inducing defense responses and physiological attributes in soybean. *Archives of Microbiology*, Apr 18;204(5):266. **I.F 2.5**
 24. Srivastav AK, Dubey D, Chopra D, Singh J, Negi S, Mujtaba SF, [Dwivedi Ashish](#) and Ray RS (2020). Oxidative stress-mediated photoactivation of carbazole inhibits human skin cell physiology. *Journal of Cellular Biochemistry*, 121(2), pp. 1273-1282. **I.F 4.237**
 25. Singh, J., Srivastva, A.K., Mandal, P., Chandra, S., Dubey, D., [Dwivedi, A.](#), Chopra, D., Tripathi, A. and Ray, R.S., 2018. Under ambient UVA exposure, pefloxacin exhibits both immunomodulatory and genotoxic effects via multiple mechanisms. *Journal of Photochemistry and Photobiology B: Biology*, 178, pp.593-605. **I.F 6.2**
 26. Singh, J., [Dwivedi, A.](#), Ray, L., Chopra, D., Dubey, D., Srivastva, A.K., Kumari, S., Yadav, R.K., Amar, S.K., Halder, C. and Ray, R.S., 2018. PLGA nanoformulation of sparfloxacin enhanced antibacterial activity with photoprotective potential under ambient UV-R exposure. *International Journal of Pharmaceutics*, 541(1-2), pp.173-187. **I.F 5.8**
 27. Singh, B.K., Kumar, V., Chauhan, A.K., [Dwivedi, A.](#), Singh, S., Kumar, A., Singh, D., Patel, D.K., Ray, R.S., Jain, S.K. and Singh, C., 2017. Neuronal nitric oxide synthase negatively

- regulates zinc-induced nigrostriatal dopaminergic neurodegeneration. *Molecular Neurobiology*, 54(4), pp.2685-2696. **I.F 6.1**
28. Chopra, D., Ray, L., [Dwivedi, A.](#), Tiwari, S.K., Singh, J., Singh, K.P., Kushwaha, H.N., Jahan, S., Pandey, A., Gupta, S.K., Chaturvedi, R.K., Pant, A. B., Ray, R. S. and Gupta, K. C., 2016. Photoprotective efficiency of PLGA-curcumin nanoparticles versus curcumin through the involvement of ERK/AKT pathway under ambient UV-R exposure in HaCaT cell line. *Biomaterials*, 84, pp.25-41. **I.F 12.47**
 29. Goyal, S., Amar, S.K., [Dwivedi, A.](#), Mujtaba, S.F., Kushwaha, H.N., Chopra, D., Pal, M.K., Singh, D., Chaturvedi, R.K. and Ray, R.S., 2016. Photosensitized 2-amino-3-hydroxypyridine-induced mitochondrial apoptosis via Smac/DIABLO in human skin cells. *Toxicology and Applied Pharmacology*, 297, pp.12-21. **I.F 4.2**
 30. Srivastav, A.K., Mujtaba, S.F., [Dwivedi, A.](#), Amar, S.K., Goyal, S., Verma, A., Kushwaha, H.N., Chaturvedi, R.K. and Ray, R.S., 2016. Photosensitized rose Bengal-induced phototoxicity on human melanoma cell line under natural sunlight exposure. *Journal of Photochemistry and Photobiology B: Biology*, 156, pp.87-99. **I.F 6.2**
 31. Pal, M.K., Jaiswar, S.P., Srivastav, A.K., Goyal, S., [Dwivedi, A.](#), Verma, A., Singh, J., Pathak, A.K., Sankhwar, P.L. and Ray, R.S., 2016. Synergistic effect of piperine and paclitaxel on cell fate via cyt-c, Bax/Bcl-2-caspase-3 pathway in ovarian adenocarcinomas SKOV-3 cells. *European Journal of Pharmacology*, 791, pp.751-762. **I.F 4.4**
 32. Amar, S.K., Goyal, S., Mujtaba, S.F., [Dwivedi, A.](#), Kushwaha, H.N., Verma, A., Chopra, D., Chaturvedi, R.K. and Ray, R.S., 2015. Role of type I & type II reactions in DNA damage and activation of caspase 3 via mitochondrial pathway induced by photosensitized benzophenone. *Toxicology Letters*, 235(2), pp.84-95. **I.F 4.3**
 33. Mujtaba, S.F., [Dwivedi, A.](#), Yadav, N., Ch, R., Kushwaha, H.N., Mudiam, M.K., Singh, G. and Ray, R.S., 2015. Superoxide mediated photomodification and DNA damage induced apoptosis by Benz (a) anthracene via mitochondrial mediated pathway. *Journal of Photochemistry and Photobiology B: Biology*, 142, pp.92-102. **I.F 6.2**
 34. Tripathi, A.K., [Dwivedi, A.](#), Pal, M.K., Rastogi, N., Gupta, P., Ali, S., BH, M.P., Kushwaha, H.N., Ray, R.S., Singh, S.K. and Duggal, S., 2014. Attenuated neuroprotective effect of riboflavin under UV-B irradiation via miR-203/c-Jun signaling pathway in vivo and in vitro. *Journal of Biomedical Science*, 21(1), p.39. **I.F 5.7**
 35. Yadav, N., [Dwivedi, A.](#), Mujtaba, S.F., Verma, A., Chaturvedi, R., Ray, R.S. and Singh, G., 2014. Photosensitized mefloquine induces ROS-mediated DNA damage and apoptosis in keratinocytes under ambient UVB and sunlight exposure. *Cell Biology and Toxicology*, 30(5), pp.253-268. **I.F 6.28**
 36. Ray, R.S., Mujtaba, S.F., [Dwivedi, A.](#), Yadav, N., Verma, A., Kushwaha, H.N., Amar, S.K., Goel, S. and Chopra, D., 2013. Singlet oxygen mediated DNA damage induced phototoxicity by ketoprofen resulting in mitochondrial depolarization and lysosomal destabilization. *Toxicology*, 314(2-3), pp.229-237. **I.F 3.3**
 37. [Dwivedi, A.](#), Pal, M.K., Tripathi, A.K., Yadav, N., Mujtaba, S.F., Pant, M.C., Singh, S.K., Mishra, D.P., Ray, R.S. and Prabhu, B.M., 2013. Role of type-II pathway in apoptotic cell death induction by photosensitized CDRI-97/78 under ambient exposure of UV-B. *Toxicology Letters*, 222(2), pp.122-131. **I.F 3.5**
 38. Mujtaba, S.F., [Dwivedi, A.](#), Yadav, N., Ray, R.S. and Singh, G., 2013. Singlet oxygen mediated apoptosis by anthrone involving lysosomes and mitochondria at ambient UV exposure. *Journal of Hazardous Materials*, 252, pp.258-271. **I.F 6.4**
 39. Yadav, N., [Dwivedi, A.](#), Mujtaba, S.F., Kushwaha, H.N., Singh, S.K. and Ray, R.S., 2013. Ambient UVA-Induced Expression of p53 and Apoptosis in Human Skin Melanoma A375 Cell Line by Quinine. *Photochemistry and Photobiology*, 89(3), pp.655-664. **I.F 2.21**
 40. [Dwivedi, A.](#), Mujtaba, S.F., Kushwaha, H.N., Ali, D., Yadav, N., Singh, S.K. and Ray, R.S., 2012. Photosensitizing mechanism and identification of levofloxacin photoproducts at ambient

UV radiation. *Photochemistry and Photobiology*, 88(2), pp.344-355. **I.F 2.21**

41. Mujtaba, S.F., [Dwivedi, A.](#), Mudiam, M.K.R., Ali, D., Yadav, N. and Ray, R.S., 2011. Production of ROS by Photosensitized Anthracene Under Sunlight and UV-R at Ambient Environmental Intensities. *Photochemistry and Photobiology*, 87(5), pp.1067-1076. **I.F 2.214**
42. Ali, D., Verma, A., Mujtaba, F., [Dwivedi, A.](#), Hans, R.K. and Ray, R.S., 2011. UVB-induced apoptosis and DNA damaging potential of chrysene via reactive oxygen species in human keratinocytes. *Toxicology Letters*, 204(2-3), pp.199-207. **I.F 3.5**

Review Articles:

1. Rana, P., Pathania, D., Gaur, P., Patel, S. K., Bajpai, M., Singh, N. T., ... & [Dwivedi, A.](#) (2025). Regulatory frameworks for fragrance safety in cosmetics: a global overview. *Toxicological Research*, 1-22. **I.F 2.5**
2. Vikram, A., Patel, S. K., Singh, A., Pathania, D., Ray, R. S., Upadhyay, A. K., & [Dwivedi, A.](#) (2024). Natural autophagy activators: a promising strategy for combating photoaging. *Phytomedicine*, 132, 155508. **I.F 8.3**
3. Verma, A., Zanoletti, A., Kareem, K. Y., Adelodun, B., Kumar, P., Ajibade, F. O., ... & [Dwivedi, A.](#) (2024). Skin protection from solar ultraviolet radiation using natural compounds: a review. *Environmental Chemistry Letters*, 22(1), 273-295. **I.F 18.9**
4. Yadav, S., [Dwivedi, A.](#), Tripathi, A., & Tripathi, A. K. (2022). Therapeutic potential of short-chain fatty acid production by gut microbiota in neurodegenerative disorders. *Nutrition Research*, 106, 72-84. **I.F 3.1**
5. Yadav, S., [Dwivedi, A.](#), & Tripathi, A. (2022). Biology of macrophage fate decision: implication in inflammatory disorders. *Cell biology international*, 46(10), 1539-1556. **I.F 3.1**
6. [Dwivedi, A.](#), Mujtaba, S. F., Verma, A., Yadav, N., Hans, R. K., & Ray, R. S. (2011, March). The role of reactive oxygen species in levofloxacin phototoxicity. *In atla-alternatives to laboratory animals* (vol. 39, no. 1, pp. 63-64). russell & burch house 96-98 north sherwood st, nottingham ng1 4ee, notts, england: frame. **I.F 3.1**
7. Yadav, N., Ali, D., [Dwivedi, A.](#), Hans, R. K., & Ray, R. S. (2011, March). The Ultraviolet A-induced Photosensitising Potential of Quinine in the Human Skin Cell Line, A375. *in atla-alternatives to laboratory animals* (vol. 39, no. 1, pp. 86-86). russell & burch house 96-98 north sherwood st, nottingham ng1 4ee, notts, england: frame. **I.F 3.1**

List of Patent/Copy Right Filed: (Nos:6)

- ❖ Dwivedi, A., Vikram, A., Singh, S., Patel, S. K., Pant, A. B., Ray, R. S., & Tripathi, A. (2024). Sunscreen Composition. Indian Patent, Intellectual Property India. Application No.: 202411072661; Reference No.: TEMP/E-1/83972/2024-DEL; C.B.R. No.: 59456.
- ❖ Dwivedi, A., Vikram, A., Patel, S. K., Pathania, D., Rana, P., Prajapati, G., Pant, A. B., Ray, R. S., Tripathi, A., Ratnashekhar, C., & Rai, A. K. (2025). Conversion of Ferulic Acid into Caffeic Acid under UV-A Exposure. Indian Patent, Intellectual Property India. Application No.: 202511008084; Reference No.: TEMP/E-1/7069/2025-DEL; C.B.R. No.: 5372.
- ❖ Dwivedi, A., Pathania, D., Patel, S. K., Vikram, A., Kamar, M. D., Gaur, P., Tripathi, A., Ray, R. S., & Pant, A. B. (2026). Conversion of Isoeugenol into Eugenol under UV-A Exposure. Indian Patent, Intellectual Property India. (Patent application under process).
- ❖ Dwivedi, A., Pathania, D., Patel, S. K., Vikram, A., Kamar, M. D., Gaur, P., Ray, R. S., Tripathi, A., & Pant, A. B. (2026). A Photochemical Process for the Preparation of 4-Allyl-2-Methoxyphenol via Ultraviolet-A Mediated Isomerization of Isoeugenol. Indian Patent.
- ❖ Aradhana Mishra, Pallavi Shukla, Ashish Dwivedi, Priya Verma. Herbal Liquid Crystal System

for Management of Bacterial Infection and Process for Preparation Thereof. Indian Patent, Intellectual Property India. Application No.: 202411017188; 30/03/2026.

- ❖ CSIR-TOX-HSCS” was registered under the Copyright Act, 1957, on 26 May 2026, CSIR, New Delhi.

Abstract Published:

1. Mujtaba S.F, **Dwivedi A**, Daoud Ali, Hans R.K, and Ray R.S (2010). Photosensitizing mechanism and Cyp- 1A1 & 1B1 genes expression by anthracene at ambient environmental intensities; **International Symposium on Alternate Animal Models in Biological Research: Present and Future Perspectives in Toxicology**, held at Indian Institute of Toxicology Research, Lucknow.
2. Neera Yadav, Daoud Ali, A. **Dwivedi**, R.K. Hans and R.S.Ray (2010). UVA irradiated photosensitizing potential of quinine in human skin cell line (A375) **International Symposium on Alternate Animal Models in Biological Research: Present and Future Perspectives in Toxicology**, held at Indian Institute of Toxicology Research, Lucknow.
3. Neera Yadav, **Dwivedi. A**, Mujtaba.S.F, and Ray R.S UV-B induced photosensitizing potential of mefloquine in human skin cell line HaCaT. **National symposium on role of ROS in plant and animal biology** (2010), Department of Biochemistry, Lucknow University, Lucknow.
4. **Dwivedi. A**, Syed F Mujtaba, Neera Yadav, Daoud Ali, and Ratan S Ray. Photosensitizing mechanism of levofloxacin at ambient UV radiation. **National symposium on role of ROS in plant and animal biology**, (2010) Department of Biochemistry, Lucknow university, Lucknow.
5. Syed F Mujtaba, **Dwivedi. A**, Neera Yadav, M. Afzal and Ratan S Ray. Singlet oxygen mediated phototoxicity of anthrone., **National symposium on role of ROS in plant and animal biology**, (2010) Department of Biochemistry, Lucknow university, Lucknow.
6. Syed Faiz Mujtaba, **Dwivedi A.**, Yadav N., Afzal M and Ray R.S. Sunlight/UV-R induced phototoxicity and photogenotoxicity mechanism of Anthraquinone by generation of ROS. **International Symposium on Advances and Applications of Molecular Biology in Clinical Research**, (2012) Department of Biochemistry, CSMMU, Lucknow.
7. Neera Yadav, Syed F Mujtaba, **Dwivedi A** and R. S Ray. Genotoxic effect of quinine in human skin cell line under sunlight exposure. **International Symposium on Advances and Applications of Molecular Biology in Clinical Research** (2012), Department of Biochemistry, CSMMU, Lucknow.
8. Deepti Chopra, Lipika Ray, **Ashish Dwivedi**, Syed Faiz Mujtaba, Neera Yadav, Jyoti Singh, Divya Dubey, Ajeet Srivastava, Priyanka Rathore, Dr.K.C.Gupta and R.S.Ray “Photoprotective Mechanism of Curcumin Nanoparticles under Ambient UV Radiation Exposure” **SIXTH SCIENCE CONCLAVE – 2013** organized by IIIT-Allahabad: December 08-14, 2013.
9. Jyoti Singh, **Ashish Dwivedi**, Deepti Chopra, Shruti Goyal, Divya Dubey, Ajeet Kumar Srivastav and Ratan Singh Ray, “Role of Type-I and Type-II photodynamic pathways in apoptotic cell death of HaCaT cell line by photosensitized OFLOX.” **International Conference on Radiation Biology**, Nov 11-13, 2014. INMAS, DARDO, New Delhi.
10. Deepti Chopra, **Ashish Dwivedi**, Jyoti Singh, K.P.Singh, Rajnish K.Chaturvedi, A.B.Pant, K.C.Gupta and Ratan Singh Ray. Photoprotective efficiency of PLGA based curcumin nanoparticles versus bulk curcumin via ERK/AKT pathway under UV-R exposure in human skin keratinocytes”. **2nd International Toxicology Conclave**, CSIR-IITR, Lucknow, Nov 15-16, 2016.
11. **A. Dwivedi**, Ratan Singh Ray and C. Haldar. Environmental UV-B irradiation attenuate the binding of ofloxacin with DNA gyrase enzyme and induced DNA damage mediated apoptosis in HaCaT cell line. **34th Annual Meeting of the Society for reproductive Biology and Comparative Endocrinology (SRBCE)** (2016) Department of Zoology, Banaras Hindu

University (BHU), **Varanasi**.

12. Jyoti Singh, **Ashish Dwivedi**, Deepti Chopra, Divya Dubey, Ajeet Kumar Srivastav and Ratan Singh Ray, "Photosensitized Sparfloxacin induced attenuated antimicrobial activity and apoptosis via oxidative stress through the involvement of mitochondria under ambient UVR exposure". Jan 23-24, 2017. **ICBAFM**, Integral University, **Lucknow**.
13. Jyoti Singh, **Ashish Dwivedi**, Deepti Chopra, K.P Singh, Divya Dubey, Ajeet Kumar Srivastav, Smita Kumari and Ratan Singh Ray, "Ambient UV-B exposure attenuate the binding affinity of ofloxacin with bacterial DNA gyrase and induced apoptosis in human keratinocytes via Reactive Oxygen Species mediated pathway" **OCC-SFRR 2017**, Berlin, **Germany**, 23-26 June 2017. Published in Free Radical Biology and Medicine, 108, S19.
14. **Sunil Kumar Patel**, Lipika Ray, Ratan Singh Ray, **Ashish Dwivedi**, "Photoprotective efficacy of PLGA-Curcumin versus PLGA-Piperine under ambient UB and Sunlight exposure" poster presented at 19th Congress of the **European Society for Photobiology (ESP 2021)**, Salzburg, **Austria**, August 30 – September 3, 2021, (Virtual Mode).
15. Sunil Kumar Patel, Diksha Pathania, Veena Jain, Somendu Kumar Roy, **Ashish Dwivedi**. Photoallergic mechanism of cinnamaldehyde under ambient UVR/sunlight exposure. **International Congress and Expo-2022, EOAI, Indore**. (Received 3rd prize for poster presentation)
16. Apeksha Vikram, Madhu Bala, Gaurav Prajapati, Sachin Shukla, Aiswarya Chaudhuri, Anurag Tripathi, Ashish Kumar Agrawal, Atul Kumar Upadhyay, and **Ashish Dwivedi** Photoprotective efficacy of Ferulic acid (FA) loaded nanostructured lipid carriers under ambient UV-R & Sunlight. **International Congress and Expo-2022, EOAI, Indore**.
17. Sunil Kumar Patel, Apeksha Vikram, Diksha Pathania, Ratan Singh Ray and **Ashish Dwivedi** oral talk entitled "Alternative Tools for the Assessment of Skin Sensitization" at "Innovative approaches in Laboratory Animal Research" organized by **ICMR-National Animal Resource Facility for Biomedical Research (ICMR-NARFBR)**, Hyderabad, Telangana, India, from 23-24 April, 2023. (Oral Presentation).
18. Apeksha Vikram, Sunil Kumar Patel, and Ratan Singh Ray, Lipika Ray, **Ashish Dwivedi** Poster Presentation entitled "Targeting Autophagy with Hybrid Nano-Encapsulated Ferulic Acid to Alleviate Chronic UVA-induced Photoaging" at **International Conference on New horizons in Biotechnology**, 2023, Trivandrum, **Kerala**. Nov 26-29, 2023.
19. Prakriti Gaur, Sunil Kumar Patel, **Ashish Dwivedi**., "Dermal toxicity elicited by Diethyl phthalate (DEP) under exposure of UVB" at **BIOSPARK-2024**, Institute of Engineering and Technology, AKTU, **Lucknow**, India on 28 February, 2024. (1st Prize for Poster Presentation)
20. Mohd Danish Kamar, Madhu Bala, Gaurav Prajapati, **Ashish Dwivedi** and Ratan Singh Ray Poster Presentation entitled "5-amino-2-methylphenol-induced phototoxicity via type-I photodynamic reaction promoting apoptosis in HaCaT cells under ambient UV-R" at **International Conference on Advances in Biological Sciences for Sustainable Development (ICABSSD 2024)** from 1 to 2 March 2024 at Central University of Jammu.
21. Diksha Pathania, Sunil Kumar Patel, Apeksha Vikram, Ratan Singh Ray and **Ashish Dwivedi** Poster Presentation entitled "Skin Sensitization and Allergic Potential of Isoeugenol under UV-R exposure" at **national conference on Women in Academia, Research and Management of Toxicology & HEALTH-WELLNESS (WARM-TH)** held at CSIR-Indian Institute of Toxicology Research (CSIR-IITR), **Lucknow**, India dated from 6th-8th March, 2024.
22. Madhu Bala, Mohd Danish Kamar, Sunil K. Patel, **Ashish Dwivedi**, Ratan Singh Ray "Phototoxicity potential of naproxen used in topical application under ambient UV-R/ Sunlight exposure" poster presented at the **conference on Women in Academia, Research and Management of Toxicology & HEALTH- WELLNESS (WARM-TH)** held from 6 th - 8 th March 2024 at the CSIR-IITR, **Lucknow**, India
23. मधु बाला, मोहम्मद दासिश कमर, **आशीष िवेदी**, रति सिंह राय "िप्रोक्सेि की िफ़केपराबैंगि सकरणोकी उपस्थसत में प्रकाश सिशाक्ता" अतराष्ट्रीय वैज्ञानिक ि दी सग णी में स्वास्थ्य और पयावरण:

वर्तमान चुनौतियाँ और भविष्य की संभावनाएँ विषय पर पोस्टर प्रस्तुत, 3-5 जूँ 2024 को
ईआईआर-आईआईटीआर, लखनऊ में आयोजित (प्रथम पुरस्कार)

24. Apeksha Vikram, Sunil Kumar Patel, Madhu Bala, Ratan Singh Ray and **Ashish Dwivedi** Poster Presentation entitled “Sun, Skin and Nano-shield: Lighting the role of autophagy in photo-protection induced by nano-ferulic acid” at **international toxicology convention on Emerging Approaches in Risk Analysis and Translational Aspects of Health and Environment (EARTH 2024)**, CSIR-Indian Institute of Toxicology Research, **Lucknow**, India. Nov 27-30, 2024.
25. Mohd Danish Kamar, Madhu Bala, Diksha Pathania, **Ashish Dwivedi** and Ratan Singh Ray Poster Presentation entitled “Photosensitization potential and phototoxicity of hair dye complex compared to individual ingredients under ambient UV-R” at **international toxicology convention on Emerging Approaches in Risk Analysis and Translational Aspects of Health and Environment (EARTH 2024)**, CSIR-Indian Institute of Toxicology Research, **Lucknow**, India. Nov 27-30, 2024.
26. Diksha Pathania, Sunil Kumar Patel, Apeksha Vikram, Ratan Singh Ray and **Ashish Dwivedi** Poster Presentation entitled “Cellular and molecular crosstalk involve in skin allergy induced by Isoeugenol and its photoproduct” at **Indo-Us Conference on Climate Change Impacts on Occupational and Environmental Health (CliCON OEH-2025)** held at Hotel Narayani Heights organized by ICMR-National Institute of Occupational Health (ICMR-NIOH) Ahmedabad, **Gujrat**, India dated from 26- 28 February, 2025. **(1st Prize for Poster Presentation)**
27. Sunil Kumar Patel, Diksha Pathania, Apeksha Vikram, Prakriti Gaur, Priyanka Rana, Medha Bajpai, Ratan Singh Ray and **Ashish Dwivedi** Oral Presentation entitled “Development of predictive markers for skin Sensitization induced by photoexcited cinnamaldehyde via OMICS approaches” at **"Indo-Us Conference on Climate Change Impacts on Occupational and Environmental Health (CliCON OEH-2025)** held at Hotel Narayani Heights organized by ICMR-National Institute of Occupational Health (ICMR-NIOH) Ahmedabad, **Gujrat**, India dated from 26-28 February, 2025. **(1st Prize for Oral Presentation)**
28. Mohd Danish Kamar, Madhu Bala, **Ashish Dwivedi**, Ratan Singh Ray Poster Presentation entitled “Phototoxicity and skin barrier disruption potential of hair dye complex compared to individual ingredients under ambient UV-R” at **"Indo-Us Conference on Climate Change Impacts on Occupational and Environmental Health (CliCON OEH-2025)** held at Hotel Narayani Heights organized by ICMR-National Institute of Occupational Health (ICMR-NIOH) Ahmedabad, **Gujrat**, India dated from 26-28 February, 2025.
29. Diksha Pathania, Sunil Kumar Patel, Apeksha Vikram, Ratan Singh Ray and **Ashish Dwivedi** Poster Presentation entitled “Ambient UVA Induced Isomerization and Skin Sensitization Mechanism of Isoeugenol” at **XXVI FAFAI International Convention and Expo 2025 (FRAGRANT BHARAT)**; held at Yashobhoomi, India International Convention Centre, Dwarka, **New Delhi** by Fragrance and Flavour Association of India (FAFAI), India dated from 05-07 March, 2025. **(Consolation Prize for Poster Presentation)**
30. Prakriti Gaur, Sunil Kumar Patel, Apeksha Vikram, Priyanka Rana, Medha Bajpai, Aditya Bhushan Pant, Ratan Singh Ray, **Ashish Dwivedi**, “Molecular Crosstalk involved in skin barrier dysfunction induced by Diethyl Phthalate (DEP) under ambient UV exposure” at **XXVI FAFAI International Convention and Expo 2025 (FRAGRANT BHARAT)**; held at Yashobhoomi, India International Convention Centre, Dwarka, **New Delhi** by Fragrance and Flavour Association of India (FAFAI), India dated from 05-07 March, 2025. **(2nd Prize for Poster Presentation)**
31. Sunil Kumar Patel, Diksha Pathania, Apeksha Vikram, Prakriti Gaur, Ratan Singh Ray and **Ashish Dwivedi** Poster Presentation entitled “Inter and intracellular molecular signaling involved in skin sensitization & allergy by cinnamaldehyde under UVB exposure” at **XXVI**

FAFAI International Convention and Expo 2025 (FRAGRANT BHARAT)" held at Yashobhoomi, India International Conventions Centre, Dwarka, **New Delhi** by Fragrance and Flavour Association of India (FAFAI). **(1st Prize for poster presentation)**

32. Mohd Danish Kamar, Madhu Bala, Sunil Kumar Patel, **Ashish Dwivedi** and Ratan Singh Ray Poster Presentation entitled "STING-Dependent Apoptosis Induced by UVB-exposed 5-Amino-2-methylphenol in Keratinocytes" at **44th Annual Conference of Society of Toxicology (STOX)**, Department of Pharmacology, Postgraduate Institute of Medical Education & Research, **Chandigarh**, India, 13 -15 October, 2025.
33. Madhu Bala, Mohd Danish Kamar, Apeksha Vikram, **Ashish Dwivedi**, Ratan Singh Ray "Photoproduct formation and phototoxic potential of Naproxen Under ambient Ultraviolet Radiation" poster presented at the **International Toxicology Convention on Emerging Approaches in Risk Analysis and Translational Aspects of Health and Environment (EARTH)** held at the CSIR-IITR, **Lucknow**, India, November 12-15, 2025.

Invited/Oral/Poster Presentation:

1. International conference on Advances in Free Radical Research, Natural Products, Antioxidants & Radioprotectors. Department of Biochemistry, CSMMU, Lucknow. Mar 19th-21st, 2009.
2. Certificate of participating in the International Symposium on Alternate Animal Models in Biological Research: Present and Future Perspectives in Toxicology, Indian Institute of Toxicology Research (CSIR-IITR), Lucknow. Oct 29th-31st, 2010.
3. Certificate of volunteer in the National symposium on role of ROS in plant and animal biology, Department of Biochemistry, Lucknow University, Lucknow. Dec 23rd-24th, 2011.
4. Certificate of attendance of the International Symposium on Advances and Applications of Molecular Biology in Clinical Research, Department of Biochemistry, CSMMU, Lucknow. Feb 21st-22nd, 2012.
5. Certificate of XXXII annual conference of the society of toxicology (STOX), India, and International symposium on new frontiers in toxicology, organized by the CSIR-Indian Institute of Toxicology Research, Lucknow. Dec 5th-7th, 2012.
6. International Symposium on Integrative Physiology & Comparative Endocrinology (ISIPCE). Department of Zoology, Banaras Hindu University (BHU), Varanasi. Feb 12th-14th, 2016.
7. 19th Congress of the European Society for Photobiology (ESP 2021), Salzburg, Austria, August 30 – September 3, 2021, (Virtual Mode).
8. International Congress and Expo-2022, EOAI, Indore, India, 25-28 May 2022.
9. Invited talk in Society of Toxicology (SOT), USA on Safety/ Allergenicity Assessment of Genetically Modified Crop. 28/01/2021.
10. Invited talk in Lucknow University on Current Trends in Food Technology and Food Processing" (CTFTFP-2021). 30/01/2021.
11. Invited Talk in workshop on "Cell culture Techniques & Cytotoxicity Analysis" on 16th Nov 2021, Lucknow University.
12. Invitation for delivering the online lecture in online training-cum-workshop on "Essential oil, Perfumery & Aromatherapy" on 10th Feb 2022.

Training Attended:

1. Bioinformatics: Tools, Techniques and Applications" Department of Biochemistry, University of Lucknow, Lucknow. 11th-12th Feb, 2012.
2. Twenty days summer training on plant breeding techniques at crop research Centre, Mauranipur, Jhansi. Oct 1st-27th, 2004
3. Two months summer training on "RAPD analysis and culture technique", Indian Institute

of Vegetable Research, Varanasi.

4. Fifteen days training from College of Life Sciences, Cancer Hospital and research Institute, Gwalior. Jun 10th-24th, 2003
5. Post Graduate Clinic “Immunology for Clinicians” at SGPGI, Lucknow, India. Sept 16th - 17th, 2006
6. International symposium on molecular pathology” clinical application and Screening Tool” Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, India. Feb 14th, 2011.
7. Seminar on Biostatistics in Medical Research & Practice”. CSMMU, Lucknow. Feb 18th 2012.
8. Certificate of Participation in the academic and interaction session during “the 5th science conclave/INSPIRE Internship Program” A Congregation of Nobel Laureates and Eminent, AMHRD-DST, IIT, Allahabad. Dec 08th-14th, 2012.
9. Institutional Animal handling Training, Israel Institute of Technology, Technion, Israel. 2018.
10. Institutional Animal handling Training, CSIR-IITR, Lucknow. 2020
11. Master Trainer Nominated by PM-FME, Government of India. 30 January 2021.
12. Nominated for attending the panel meeting regarding the list of permitted/ Prohibited/Restricted Ingredients for use in Fragrances in CIMAP, Lucknow on 16th March 2022.
13. 5th GLP-Inspector Training completed successfully held in New Delhi, NGCMA, 2022.

Research Projects Handled

- **Total Projects:** 13
- **Projects as Principal Investigator:** 6
- **Projects as Co-Principal Investigator/Co-Nodal Investigator:** 5

1. **Dwivedi, A. (Principal Investigator). (2021–2022).** *Photoallergic Potential of Cinnamaldehyde and its Photomodified Products under Ambient UV Radiation/Sunlight Exposure.* **CSIR-Indian Institute of Toxicology Research (CSIR-IITR), Lucknow.**
2. **Dwivedi, A. (Co-Principal Investigator). (2022–2023).** *Assessment of Allergic Potential of Essential Oils and their Ingredients Following Photomodification under Ambient UV Radiation/Sunlight Exposure.* **CSIR Aroma Mission.**
3. **Dwivedi, A. (Principal Investigator). (2023–2024).** *Safety Assessment of Diethyl Phthalate (DEP), an Important Ingredient of Incense Sticks (Agarbatti), under UV Radiation/Sunlight Exposure.* **Khadi and Village Industries Commission (KVIC), Ministry of MSME, Government of India.**
4. **Dwivedi, A. (Principal Investigator). (2023–2025).** *Exploring the Mechanisms of Skin Sensitization and Allergic Reactions Induced by Fragrances in Cosmetics: Toxicokinetic and Safety Assessment.* **OLP-20, CSIR-Indian Institute of Toxicology Research (CSIR-IITR), Lucknow.**
5. **Dwivedi, A. (Participant). (2023–2025).** *Nanofertilizers Safety Evaluation.* **Rashtriya Chemicals & Fertilizers Ltd. (RCF), Mumbai.**
6. **Dwivedi, A. (Co-Principal Investigator). (2023–2025).** *Preclinical Safety Assessment of Cosmetic Products.* **SSP-495, CSIR-IITR.**
7. **Dwivedi, A. (Principal Investigator). (2023–2026).** *Development of a 3D Bioprinted Immunocompetent Skin Equivalent Model for Safety Assessment of Cosmetics and Personal Care Products.* **Department of Health Research (DHR), Ministry of Health & Family Welfare, Government of India.**
8. **Dwivedi, A. (Principal Investigator). (2024–2025).** *Photocytotoxicity Assessment of the Herbal Formulation "Presson" Containing Botanical Essential Extracts.* **SSP-519, CSIR-IITR.**

- 9. Dwivedi, A. (Co-Principal Investigator). (2024–2026).** *Exploring the Mechanisms of Skin Sensitization and Allergic Reactions Induced by Fragrances in Cosmetics: Toxicokinetic and Safety Assessment.* **OLP-27, CSIR-Indian Institute of Toxicology Research (CSIR-IITR), Lucknow.**
- 10. Dwivedi, A. (Co-Principal Investigator). (2025–2027).** *In Vitro Toxicity Studies of Drug Molecules.* **SSP-521, CSIR-IITR.**
- 11. Dwivedi, A. (Principal Investigator). (2025–Ongoing).** *SHIELD-AhR: Skin Homeostasis Integrity & Environmental Linkage to Dye-Induced Sensitization—Deciphering the AhR–Barrier Interplay.* **OLP-45, CSIR-IITR.**
- 12. Dwivedi, A. (Co-Principal Investigator). (2025–Ongoing).** *DMS-MAP: A Micro-Volume Dried Matrix Spot-Based Analytical Platform for Human Biomonitoring and 3Rs-Compliant Toxicokinetic Studies of Chemicals.* **OLP-54, CSIR-IITR.**
- 13. Dwivedi, A. (Co-Nodal Investigator). (2025–Ongoing).** *Development of Essential Oil-Based Products for Veterinary Applications, Antibiotic-Free Poultry, Fisheries, and Comprehensive Safety Evaluation.* **CSIR Aroma Mission 4.0.**