

Neeraj Mahindroo

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Research Interests

New Drug Discovery, Design and synthesis of small drug like molecules.

Professional experience

Working as Postdoctoral Research Associate at St. Jude Children's Research Hospital, Memphis TN, U.S.A. since 14th August 2006. The work profile included research in area of new drug discovery targeted at pediatric cancers, synthesis of small drug-like molecules and their biological evaluation.

Worked as Post Doctoral Fellow at Division of Biotechnology and Pharmaceutical Research, National Health Research Institutes, Taipei, Taiwan from April 2002 to May 2006. The work profile included research in area of new drug discovery, synthesis of small drug-like molecules, overall management of research projects, and writing of scientific articles in peer-reviewed journals. The work resulted in more than 12 publications in peer reviewed journals.

Lecturer at Department of Pharmaceutical Sciences, Guru Nanak Dev University, Amritsar from October 2000 to March 2002. The work profile included teaching of Pharmaceutical and Medicinal Chemistry to Undergraduate and Postgraduate classes and research work.

Research Fellow at International Centre for Science and High Technology (ICS), Trieste, Italy, an organ of United Nation Industrial Development Organization (UNIDO) from April 2000 to October 2000.

Senior Research Fellow in the projects entitled 'Resolution of Racemic Drugs' sponsored by RRL-DST-Zyodus Cadila and 'Development of herbal drugs as immunomodulators' sponsored by RRL-DST-ZPW from May 1999 to March 2000 at Regional Research Laboratory (CSIR), Jammu, India.
CSIR Senior Research Fellow from October 1996 to April 1999 Regional Research Laboratory (CSIR), Jammu, India.

Work experience

Design and Synthesis of small drug like molecules involving multistep synthesis with an aim to discover new drugs with particular interest in anti-diabetics and anti-cancer areas. Synthesis of heterocyclic compounds using classical as well as microwave mediated organic synthesis.

Resolution of racemic drugs and intermediates with the help of enzymes. Determination of the enantiomeric excess of the resolved compounds with help of chiral HPLC and optical rotation.

Chemical investigation of natural products. Experienced in chromatographic and spectroscopic techniques.

Acquainted with database and prior art search using Delphion, Derwent, SciFinder, MDL, Beilstein Crossfire etc. Well versed with interpretation of NMR, MS, IR, UV spectra and handling of instruments such as NMR, LC-MS, HPLC, HPTLC, UV, IR etc.

Education

1996 - 2001 Ph.D. (Pharmaceutical Sciences), Faculty of Pharmaceutical Sciences, Panjab University, Chandigarh, India - August 2001.

The research work was carried out at University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh 160 014 India and Regional Research Laboratory (CSIR), Jammu 180001 India

Thesis Title : A. CHEMICAL INVESTIGATIONS OF PIPER SPP. AND KOELPINIA LINEARIS PALL. B. SYNTHETIC MODIFICATIONS OF VASICINE, AN ALKALOID FROM ADHATODA VASICA NEES. FOR SAR STUDIES

1994 - 1996 M. Pharmacy (Pharmaceutical Chemistry) University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh 160 014 India

1990 - 1994 B. Pharmacy Department of Pharmaceutical Sciences, Panjab University, Chandigarh 160 014 India

Publications

1. **Mahindroo N**, Punchihewa C, Bail AM, and Fujii N, Indole-2-amide based biochemical antagonist of Dishevelled PDZ domain interaction down-regulates Dishevelled-driven Tcf transcriptional activity. *Bioorg. Med. Chem. Lett.* **2008**, *18*, in press.
2. Mayasundari A, Ferreira AM, He L, **Mahindroo N**, Bashford D, and Fujii N, Rational design of the first small-molecule antagonists of NHERF1/EBP50 PDZ domains. *Bioorg. Med. Chem. Lett.* **2008**, *18*, in press.
3. **Mahindroo N**, Peng Y-H, Lin C-H, Tan U-K, Prakash E, Lien T-W, Lu I-L, Lee H-J, Hsu JT-A, Chen X, Liao C-C, Lyu P-C, Chao Y-S, Wu S-W, and Hsieh H-P, Structural Basis for the Structure-Activity Relationships of Peroxisome Proliferator-Activated Receptor Agonists. *J. Med. Chem.* **2006**, *49*, 6421-6424.
4. Liou J-P, **Mahindroo N**, Chang C-W, Chang C-Y, Kao F-M, Lee W-H, Kuo C-C, Yeh T-K, Tan U-K, Tung Y-S, Chang J-Y, and Hsieh H-P, Structure-Activity Relationship Studies of 3-Aroylindoles as Potent Antimitotic Agents. *ChemMedChem* **2006**, *1*, 1106-1118.
5. Lu I-L, **Mahindroo N**, Liang P-H, Peng Y-H, Kuo C-J, Tsai K-C, Hsieh H-P, Chao Y-S, and Wu S-Y, Structure-Based Drug Design and Structural Biology Study of Novel Nonpeptide Inhibitors of Severe Acute Respiratory Syndrome Coronavirus Main Protease. *J. Med. Chem.* **2006**, *49*, 5154-5161.
6. Tsai K-C, Chen S-Y, Liang P-H, Lu I-L, **Mahindroo N**, Hsieh H-P, Chao Y-S, Liu L, Liu D, Lien W, Lin T-H, and Wu S-Y. Discovery of a Novel Family of SARS-CoV Protease Inhibitors by Virtual Screening and 3D-QSAR Studies. *J. Med. Chem.* **2006**, *49*, 3485-3495.
7. Lu I-L, Huang C-F, Peng Y-H, Lin Y-T, Hsieh H-P, Chen C-T, Lien T-W, Lee H-J, **Mahindroo N**, Prakash E, Goparaju CMV, Chen X, Liao C-C, Chao Y-S, Hsu JT-A, and Wu S-Y, Structure-Based Drug Design of a Novel Family of PPAR γ Partial Agonists: Virtual Screening, X-ray Crystallography and In Vitro/In Vivo Biological Activities. *J. Med. Chem.* **2006**, *49*, 2703-2712.
8. **Mahindroo N**, Liou J-P, Chang J-Y and, Hsieh H-P, Antitubulin Agents for Treatment of Cancer- A Medicinal Chemistry Update, *Expert Opinion on Therapeutic Patents* **2006**, *16*, 647-691.
9. **Mahindroo N**, Wang C-C, Liao C-C, Huang C-F, Lu I-L, Lien T-W, Peng Y-H, Huang W-J, Lin Y-T, Hsu M-C, Lin C-H, Tsai C-H, Hsu JT-A, Chen X, Lyu P-C, Chao Y-S, Wu S-W, and Hsieh H-P, Indol-1-yl Acetic Acids as Peroxisome Proliferator-Activated Receptor Agonists: Design, Synthesis, Structural Biology, and Molecular Docking Studies. *J. Med. Chem.* **2006**, *49*, 1212-1216.
10. **Mahindroo N**, Huang C-F, Peng Y-H, Wang C-C, Liao C-C, Lien T-W, Chittimalla SK, Huang W-J, Tsai C-H, Prakash E, Chen C-P, Hsu T-A, Peng C-H, Lu I-L, Lee L-H, Chang Y-W, Chen W-C, Chou Y-C, Chen C-T, Goparaju CMV, Chen Y-S, Lan S-J, Yu M-C, Chen X, Chao Y-S, Wu S-Y, and Hsieh H-P, Novel Indole-based Peroxisome Proliferator-Activated Receptor Agonists: Design, SAR, Structural Biology and Biological Activities, *J. Med. Chem.* **2005**, *48*, 8194-8208.
11. **Mahindroo N**, Ahmed Z, Bhagat A, Bedi KL, Khajuria RK, Kapoor VK, and Dhar KL, Synthesis and Structure-Activity Relationships of Vasicine Analogues as Bronchodilatory Agents. *Med. Chem. Res.* **2005**, *14*, 347-368.
12. Tseng H-Y, Wu S-H, Huang W-H, Wang S-F, Yang Y-N, **Mahindroo N**, Hsu T-A, Jiaang W-T and Lee S-J, Benzothiazolium Compounds: Novel Classes of Inhibitors That Suppress the Nitric Oxide Production in RAW264.7 Cells Stimulated by LPS/IFN γ . *Bioorg. Med. Chem. Lett.* **2005**, *15*, 2027-2032.
13. Hsieh H-P, Liou J-P and **Mahindroo N**, Pharmaceutical Design of Antimitotic Agents Based on Combretastatins, *Current Pharmaceutical Design*, **2005**, *11*, 1655-1677.
14. Liou J-P, Chang J-Y, Chang C-W, Chang C-Y, **Mahindroo N**, Kao F-M, and Hsieh H-P, Synthesis and Structure-Activity Relationships of 3-Aminobenzophenones as Antimitotic Agents, *J. Med. Chem.* **2004**, *47*, 2897-2905.

15. Hsieh H-P, Liou J-P, Lin Y-T, **Mahindroo N**, Chang J-Y, Yang Y-N, Chern S-S, Tan U-K, Chang C-W, Chen T-W, Lin C-H, Chang Y-Y and Wang C-C, Structure-Activity and Crystallographic Analysis of Benzophenone Derivatives - the Potential Anticancer Agents, *Bioorg. Med. Chem. Lett.* **2003**, *13*, 101-105.
16. Kapoor VK, Dubey S and **Mahindroo N**, Preparation, antiprotozoal and antibacterial evaluation and mutagenicity of some metronidazole derivatives, *Indian J. Chem.* **2000**, *39B*, 27-30.
17. Kapoor VK and **Mahindroo N**, Chemical Modifications of Metronidazole, *J. Punjab Academy of Sciences*, **1999**, *1*, 185-197.
18. Kapoor VK and **Mahindroo N**, Recent advances in structure modifications of Taxol, *Indian J. Chem.*, **1997**, *36B*, 639-652.
19. **Mahindroo N**, Glossary of Assays of Pharmacopoeial Drugs, *Pharmacos*, **1995**, *32*, 57-71.

Presentations

1. **Mahindroo N**, Peng Y-H, Lien T-W, Lin C-H, Lu I-L, Prakash E, Lee H-J, Hsu J T-A, Chen X, Yeh T-K, Chen C-T, Chao Y-S, Wu S-Y, and Hsieh H-P, Indolyloxyalkanoic Acids as Peroxisome Proliferator-Activated Receptor Agonists: SAR, Structural Biology and Biological Studies, *Third workshop on Drug Discovery and Development in New Millennium (D3NM-3)*, National Institute of Pharmaceutical Education and Research (NIPER), S.A.S. Nagar (Mohali), India, Feb. 21-24, **2006**, Poster no PP-04.
2. Hsieh H-P, **Mahindroo N**, Wang C-C, Huang C-F, Lien T-W, Tsai C-H, Peng Y-H, Lee L-H, Prakash E, Chen W-C, Chang Y-W, Hsu T-A, Chen X, Wu S-W, Chen C-T, Lan S-J, and Chao Y-S, Design and Structure-Activity Relationships of Novel Indole-based PPAR Agonists as Antidiabetic Agents, *229th ACS National Meeting and Exposition, San Diego, USA*, March 13th to March 17th **2005**, Poster no 181.
3. Hsieh H-P, **Mahindroo N**, Coumar MS, Wang C-C, Huang C-F, Lien T-W, Tsai C-H, Lin Y-T, Lee L-H, Prakash E, Hsu T-A, Chen X, Wu S-W, Chen C-T, and Chao Y-S, Design, Synthesis and SAR of Indole-based PPAR Agonists, *229th ACS National Meeting and Exposition, San Diego, USA*, March 13th to March 17th **2005**, Poster no 182.
4. **Mahindroo N**, Wang C-C, Huang C-F, Chen X, Hsu T-A, and Hsieh H-P, Rational Design of Indole-based PPAR agonists, *29th National Medicinal Chemistry Symposium, University of Wisconsin, Madison, USA*, June 27 to July 1 2004 Poster no 77.
5. **Mahindroo N**, Liou J-P, Lin Y-T, Yang Y-N, Chang C-W, Chen T-W, and Hsieh H-P, Structure-Activity and Crystallographic Analysis of Benzophenone Derivatives - the Potential Anticancer Agents, *Advancing Library Design and Organic Synthesis, La Jolla, California, USA*, February **2003**.
6. **Mahindroo N**, Kapoor VK, Ahmed Z, Bhagat A, Bedi KL and Dhar KL, Synthesis and Structure Activity Relationship of Quinazolines based on Vasicine as Bronchodilatory Agents, *International Symposium on Progress in Drug Discovery and Development Sciences, Bangalore, India*, **2001**.
7. Kapoor VK, Dubey S and **Mahindroo N**, Preparation, Antiprotozoal and Antibacterial Evaluation of some Metronidazole derivatives, *50th Indian Pharmaceutical Congress held jointly with 17th FAPA congress, Mumbai, India*, **1998**, Abstract No. ID17, p-55.
8. **Mahindroo N**, Kapoor VK and Dhar KL, Microwave mediated synthesis of some dihydroquinazolines, *49th Indian Pharmaceutical Congress, Thiruvananthapuram, India*, **1997**, Abstract No. B15, p-80.

Patents and Patent Applications

1. **Neeraj Mahindroo**, Ravi Kant Khajuria, Kasturi Lal Bedi, and Kanaya Lal Dhar, A process for the preparation of 4-aryl-2,6-dimethyl-3,5-dicarboethoxy-1,4-dihydropyridines and Corresponding hydroxy derivatives. **Indian Patent IN0193310**.
2. **Neeraj Mahindroo**, Ravi Kant Khajuria, Vijay Kumar Kapoor and Kanaya Lal Dhar, A process for the preparation of 4-aryl-2,6-dimethyl-3-carboethoxy-5-carbomethoxy-1,4-dihydropyridines useful as therapeutic agents, **Indian Patent IN0192858A**.
3. Subash Chander Taneja, Surrinder Koul, **Neeraj Mahindroo**, Ghulam Nabi Qazi, Mayank Ghanshyambhai Dave, Saurabh Jyantibhai Patel, A novel enzymatic process for the preparation of substituted piperidines, **Indian Patent IN0193311**.
4. Hsing-Pang Hsieh, **Neeraj Mahindroo**, Tsu-An Hsu; Chien-Fu Hung, Xin Chen, 'Indole Compounds,' **US Patent Application, US 2005/0124675A1**.
5. Hsing-Pang Hsieh, **Neeraj Mahindroo**, Tsu-An Hsu; Chien-Fu Hung, Xin Chen, 'Indole Compounds,' **WIPO PCT, WO05056522A2**.

6. Hsing-Pang Hsieh, **Neeraj Mahindroo**, Tsu-An Hsu; Chien-Fu Hung, Xin Chen, 'Indole Compounds,' **Taiwan (R.O.C) Patent Application, TW200530228**, September 16, 2005.
7. Hsing-Pang Hsieh, **Neeraj Mahindroo**, Tsu-An Hsu; Chien-Fu Hung, Xin Chen, 'Indole Compounds,' **European Patent Application, EP1689389**, August 16, 2006.

Additional professional activities

Reviewer Bioorganic & Medicinal Chemistry Letters and Bioorganic & Medicinal Chemistry from 2005.
Academic Secretary, Panjab University Pharmaceutical Society (1994-95)
Actively participated in organisation of 46th Indian Pharmaceutical Congress (1994) and Golden Jubilee Celebrations of Department of Pharmaceutical Sciences, Panjab University, Chandigarh, India.

Professional memberships

Life member - Indian Pharmaceutical Association
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References

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