Sanjay Jachak, M. Pharm., Ph.D.
Professor

JOB PROFILE:

Year	Designation & Place
August 2011-continuing	Professor, National Institute of Pharmaceutical Education and Research (NIPER), Mohali, Punjab.
August 2006-	Associate Professor, National Institute of Pharmaceutical Education and Research (NIPER), Mohali, Punjab.
July 1999 – July 2006	Assistant Professor, National Institute of Pharmaceutical Education and Research (NIPER), Mohali, Punjab.
Mar 1998- June 1999	Lecturer, N.D. M.V.P. Samaj's College of Pharmacy, Nashik, Maharashtra
Mar. 1995-Feb. 1998	Austrian Research Fellow, Institute of Pharmacognosy, Karl Franzens University, Graz, Austria.
Mar. 1994-Dec. 1994	R & D Officer, Glenmark Pharmaceuticals Ltd., Nashik, Maharashtra

PROFESSIONAL INTERESTS

Screening of plant extracts and their isolates (using bioassay-directed fractionation) for COX-2/COX-1 inhibitory activity which may be helpful as the leads for development of safer anti-inflammatory drugs with minimum side effects; design and synthesis of COX-2 inhibitors based on natural products; design and synthesis of microsomal Prostaglandin E_2 Synthase (mPGES)-1 inhibitors as novel anti-inflammatory agents; evaluation of synthesized compounds for anti-inflammatory activity in vitro using other molecular targets such as cytokines, TNF-α, IL-1 (IL-1 α and IL-1β) and IL-6; evaluation of most bioactive compounds/lead molecules for anti-inflammatory activity in vivo; bioassay guided isolation and characterization of potential antimycobacterial natural products, discovery of bacterial efflux pump inhibitors from medicinal plants; antioxidant, and anti-diabetic natural products; standardization of herbal drugs and formulations.

AWARDS and HONOURS

- Most cited paper award, Bioorganic Medicinal Chemistry Letters, 2005-2008.
- Editorial Board Member (2008-2011), Anti-Infective Agents in Medicinal Chemistry, Bentham Science Publishers.
- Research Fellowship, Austrian Academic Exchange Service, Vienna, Austria from 1995-1998.

REFEREE:

- Acting as a referee for several international journals in the field of natural product/medicinal chemistry including the *European Journal of Medicinal Chemistry*, *Journal of Ethnopharmacology* and *Bioorganic Medicinal Chemistry Letters* Elsevier Publishers, *Current Medicinal Chemistry*, Bentham Publisher and *Journal of Natural Products*, American Chemical Society Publisher since 2003.

SOCIETY MEMBERSHIP

1. Society for Medicinal Plant Research, Germany-Europe.
2. Indian Pharmaceutical Association (IPA), Mumbai, India- Life member.
3. Society of Pharmacognsoy, Bhopal, India- Life Member.
4. Association of Pharmaceutical Teachers (APTI), Bangalore, India- Life member.

PERSONAL INFORMATION:

- Date of Birth : 11/09/1971.
- Nationality : Indian.
- Languages known : English, German, Hindi, Marathi.

PROJECTS HANDLED:

- Completed 1 research project as PI, funded by CSIR, New Delhi.
- Completed 2 research projects as Co-I funded by Deptt. of AYUSH, Ministry of Health and Family Welfare, Govt. of India, New Delhi and DBT, Govt. of India, New Delhi.
- Completed 2 research projects as Co-I funded by in 2 Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, Govt. of India, New Delhi, India.

ADVISORY AND RESEARCH CONSULTANCY TO PHARMA INDUSTRY

- Vedic Life Sciences, Mumbai
- Dozo Laboratories, Mohali

GUIDANCE TO STUDENTS

- Ph.D.: **07 (3 completed, 4 registered)**
- Master students: **45**

ADDITIONAL POSITION HELD

- Associate Dean, NIPER-SAS Nagar (2011-12)
- In-charge, **Small & Medium Pharmaceutical Industry Centre** (SMPIC) at NIPER-SAS Nagar (2010-2011).

INVITED LECTURES:

- Delivered more than **50** invited lectures in Conferences/Training courses at Institutes/Universities.
- Delivered an invited keynote lecture at the 55th International Congress and Annual Meeting of the Society for Medicinal Plant Research, Sept. 2-6, 2007, Graz, Austria.

PUBLICATIONS:

Patents:

1. **Sanjay M. Jachak**, Uma Ramachandran, Alka Mital, Krishnamoorty Srinivasan, Poduri Rama Rao, Chaman Lal Kaul. **'Naphthoquinones as Antidiabetic Agents'**, Indian WTO Patent Application No. 669/DEL/2004. Granted on 31-03-2008.
2. C. Selvam, **Sanjay M. Jachak**, R. Thilagavathi and Asit K. Chakraborti. '**Novel Anti-inflammatory** and **Antioxidant Agents'**, Indian WTO Patent Application No. 1704/DEL/2004 dated 09-09-2004.
3. Selvam, **Sanjay M. Jachak**, Gnana Oli R., K. K. Bhutani. **'New anti-inflammatory compounds from *Indigofera aspalathoides*',** Indian WTO Patent Application No. 1489/DEL/2003 dated 28-11-2003.

Research papers:

1. Roy SK, Bairwa K, Grover J, Srivastava A, Jachak SM. Determination of negundoside and agnuside in *Vitex negundo* by qNMR and method validation. *J. Anal. Chem.* **2014,** accepted.
2. Grover J, Kumar V, Singh V, Sobhia ME, Jachak SM. Synthesis, biological evaluation and docking analysis of 3-Methyl-1-phenylchromeno[4,3-*c*]pyrazol-4(1*H*)-ones as potential cyclooxygenase (COX)-2 inhibitors. *Bioorg. Med. Chem. Lett.* **2014**, *24*, 4638-4642 (DOI: 10.1016/j.bmcl.2014.08.050).

3. Bahl A, Jachak SM, Palaniveloo K, Ramachandram T, Vairappan CS, Chopra HK. 2-Acetoxyverecynarmin C, a new briarane COX inhibitory diterpenoid from *Pennatula aculeata*. *Nat. Prod. Comm.* **2014**, *9*, 1139-1141.
4. Chandna N, Kapoor JK, Grover J, Bairwa K, Goyal V, Jachak SM. Pyrazolylbenzyltriazoles as cyclooxygenase inhibitors: synthesis and biological evaluation as dual anti-inflammatory and antimicrobial agents. *New J. Chem.* **2014**, *38*, 3662-3672.
5. Jachak SM, Gautam R, Patel R. Cyclooxygenase inhibitory, anti-inflammatory, and antioxidant activities of *Inula cuspidata*. *Nat. Prod. Comm.* **2014**, under review.
6. Bairwa K, Jachak SM. Anti-inflammatory potential of a lipid based formulation of rotenoid rich fraction prepared from *Boerhaavia diffusa* L. *Pharm. Biol.* **2014**, under revision.
7. Grover J, Kumar V, Singh V, Bairwa K, Sobhia ME, Jachak SM. Synthesis, biological evaluation, molecular docking and theoretical evaluation of ADMET properties of nepodin and chrysophanol derivatives as cyclooxygenase (COX-1, COX-2) inhibitors. *Eur. J. Med. Chem.* **2014**, *80,* 47-56.
8. Bairwa K, Srivastava A, Jachak SM. Quantitative analysis of boeravinones in the roots of *Boerhaavia diffusa* by UPLC-PDA. *Phytochem. Anal.* **2014**, *25*, 415-420 (DOI 10.1002/pca.2509).
9. Grover J, Roy SK, Jachak SM. Potassium carbonate-mediated efficient and convenient synthesis 3-Methyl-1-phenylchromeno[4,3-*c*]pyrazol-4(1*H*)-ones. *Synth. Comm.* **2014**, *44*, 1914-1923.
10. Chandna N, Kumar S, Kaushik P, Kaushik D, Roy S, Gupta GK, Jachak SM, Kapoor JK, Sharma PK. Synthesis of novel celecoxib analogues by bioisosteric replacement of sulfonamide as potent anti-inflammatory agents and cyclooxygenase inhibitors. *Bioorg. Med. Chem.* **2013**, *21*, 4581-4590.
11. Roy SK, Kumari N, Gupta S, Pahwa S, Nandanwar H, Jachak SM. 7-Hydroxy-(*E*)-3-phenylmethylene-chroman-4-one analogues as efflux pump inhibitors against *Mycobacterium smegmatis* mc^2 155. *Eur. J. Med. Chem.* **2013**, *66*, 499-507.
12. Roy SK, Pahwa S, Kumari N, Agrahari UC, Bhutani KK, Jachak SM and Nandanwar HS. NorA efflux pump inhibitory activity of coumarins from *Mesua ferrea*. *Fitoterapia* **2013**, *90*, 140-150.
13. Roy SK, Bairwa K, Grover J, Srivastava A, Jachak SM. Analysis of flavonoids and iridoids in *Vitex negundo* Linn. by HPLC-PDA and method validation. *Nat. Prod. Comm.* **2013**, *8*, 1241-1244.
14. Bairwa K, Singh IN, Roy SK, Grover J, Shrivastava A, Jachak SM. Rotenoids from *Boerhaavia diffusa* as cyclooxygenase (COX)-1, COX-2 inhibitors. *J. Nat. Prod.* **2013**, *76*, 1393-1398.
15. Somendu K Roy, Amit Srivastava, Sanjay M. Jachak. Analysis of homoisoflavonoids in *Caesalpinia digyna* by HPLC-ESI-MS, HPLC and method validation. *Nat. Prod. Comm*. 2012, **7**, 1189-1192.
16. Somendu K Roy, Sonika Pahwa, Hemraj Nandanwar, Sanjay M. Jachak. Phenlypropanoids of *Alipina galanga* as efflux pump inhibitors in *Mycobacterim smegmatis* mc^2 155. *Fitoterapia* 2012, **83**, 1248-1255.
17. Sougata Ghosh, Mehul Ahire, Sumersingh Patil, Amit Jabgunde, Minakshi Bhat Dusane, Bimba N. Joshi, Karishma Pardesi, **Sanjay Jachak**, Dilip D. Dhavale, Balu A. Chopade. Antidiabetic activity of *Gnidia glauca* and *Dioscorea bulbifera*: Potent amylase and glucosidase inhibitors. *Evidence Compl. Alternative Med.*, vol. 2012, Article ID 929051, 10 pages, 2012. doi:10.1155/2012/929051.
18. Gaurav Kaithwas, Raju Gautam, **Sanjay M. Jachak**, Arvind Saklani. Antiarthritic effects of *Ajuga bracteosa* Wall ex. Benth. In acute and chronic models of arthritis in albino rats. *Asian Pacific Journal of Tropical Biomedicine* 2012, **2**, 185-188.

19. Somendu K Roy, Udai Chand Agrahari, Raju Gautam, Amit Srivastava, **Sanjay M. Jachak.** Isointricatinol, a new antioxidant homoisoflavonoid from the roots of *Caesalpinia digyna* Rottler. *Nat. Prod. Res.* 2012, **26**, 690-695.
20. Raju Gautam, **Sanjay M. Jachak**, Vivek Kumar, C. Gopi Mohan. Synthesis, biological evaluation and molecular docking studies of stellatin derivatives as cyclooxygenase (COX-1, COX-2) inhibitors and anti-inflammatory agents. *Bioorg. Med. Chem. Lett.* 2011, **21**, 1612-1616.
21. Raju Gautam, **Sanjay M. Jachak,** Arvind Saklani. Anti-inflammatory effect of *Ajuga bracteosa* Wall Ex. Benth. mediated through cylooxygenase (COX) inhibiton. *J. Ethnopharmacol.* 2011, **133,** 928-930.
22. **Sanjay M. Jachak**, Raju Gautam, C. Selvam, Himanshu Madhan, Amit Srivastava, Taj Khan. Anti-inflammatory, cyclooxygenase inhibitory and antioxidant activities of standardized extracts of *Tridax procumbens* L. *Fitoterapia* 2011, **82**, 173-177.
23. Raju Gautam, Amit Srivastava, **Sanjay M. Jachak.** Simultaneous determination of naphthalene and anthraquinone derivatives in *Rumex nepalensis* Spreng. roots by HPLC: Comparison of different extraction techniques and method validation. *Phytochem. Anal.* 2011, **22**, 153-157.
24. Uma R. Lal, Shailendra M. Tripathi, **Sanjay M. Jachak**, Kamlesh K. Bhutani, Inder P. Singh. RP-HPLC analysis of Jirakadyarishta and chemical changes during fermentation. *Nat. Prod. Comm.* 2010, **5**, 1767-1770.
25. Harmeet S. Sandhu, Sameer Sapra, Mukesh Gupta, Kunal Nepali, Raju Gautam, Sunil Yadav, Raj Kumar, **Sanjay M. Jachak**, Manoj Chugh, Manish K. Gupta, Om P. Suri, K.L. Dhar. Synthesis and biological evaluation of arylidene analogues of Meldrum's acid as a new class of antimalarial and antioxidant agents. *Bioorg. Med. Chem.* 2010, **18**, 5626-5633.
26. Madhukar N. Jachak , Maruti G. Ghagare, Dilip R. Birari, Ramhari V. Rote, Muddassar A. Kazi, **Sanjay M. Jachak**, Raghunath B. Toche. A novel synthetic approach towards pyrazole-4-carboxamides using *N*-(3-(dimethylamino)-2-formylacryloyl) formamide. *Monatsh. Chem.* 2010, **141**, 569-576.
27. Raju Gautam, Kailas V. Karkhile, Kamlesh K Bhutani, **Sanjay M. Jachak**. Anti-inflammatory, cyclooxygenase (COX)-2, COX-1 inhibitory and free radical scavenging effects of *Rumex nepalensis* Spreng. *Planta Med.* 2010, **76**, 1564-1569.
28. Raju Gautam, Amit Srivastava, **Sanjay M. Jachak.** Determination of chromones in *Dysophylla stellata* by HPLC: Method development, validation and comparison of different extraction methods. *Nat. Prod. Comm.* 2010, **5**, 555-558.
29. Uma R. Lal, Shailendra M. Tripathi, **Sanjay M. Jachak**, Kamlesh K. Bhutani, Inder P. Singh. Chemical changes during fermentation of Abhayarishta and its standardization by HPLC-DAD. *Nat. Prod. Comm.* 2010, **5**, 575-579.
30. Raju Gautam, Amit Srivastava, **Sanjay M. Jachak**, Arvind Saklani. Anti-inflammatory, cyclooxygenase (COX)-2, COX-1 inhibitory and antioxidant effects of *Dysophylla stellata* Benth. *Fitoterapia* 2010, **81**, 45-49.
31. Uma R. Lal, Shailendra M. Tripathi, **Sanjay M. Jachak**, Kamlesh K. Bhutani, Inder P. Singh. HPLC analysis and standardization of Arjunarista- An Ayurvedic cardioprotective formulation. *Sci. Pharm.* 2009, **77**, 605-616.
32. Raju Gautam, **Sanjay M. Jachak**. Anti-inflammatory and cyclooxygenase (COX)-2 inhibitory activities of *Rumex nepalensis* Spreng. *Planta Med*. 2008, **74**, 1019.
33. **Sanjay M. Jachak**, Amit Srivastava, Doris Lechner, Franz Bucar. Evaluation of antimycobacterial activity of some *Piper* species. *Planta Med*. 2008, **74**, 1013.
34. Rajesh Rathore, Jay Prakash Jain, Amit Srivastava, **S. M. Jachak**, Neeraj Kumar. Simultaneous determination of Hydrazinocurcumin and phenol red in samples from rat intestinal

permeability studies: HPLC method development and validation. *J. Pharm. Biomed. Anal.* 2008, **46**, 374-380.

35. **Sanjay M. Jachak**, C. Selvam, Amit Srivastava, Vijay Ahuja. Evaluation of anti-inflammatory activity and identification of bioactive compounds from *Vitex negundo* L., *Cardiospermum halicacabum* L. and *Tridax procumbens* L. *Planta Med*. 2007, **73**, 802-803.
36. **Sanjay M. Jachak.** Characterization, design and synthesis of potential COX-2 inhibitors based on natural products. *Planta Med*. 2006, **72**, 1021.
37. C. Selvam, **Sanjay M. Jachak**, R. Thilagavathi and Asit K. Chakraborti. Design, synthesis, biological evaluation and molecular docking of curcumin analogues as antioxidant, cyclooxygenase inhibitory and anti-inflammatory agents. *Bioorg. Med. Chem. Lett.* 2005, **15**, 1793-1797.
38. C. Selvam, **Sanjay M. Jachak**, Gnana Oli R., Ramasamy Thilagavati, Asit K. Chakraborti, K. K. Bhutani. A New Cyclooxygenase (COX) Inhibitory Pterocarpan from *Indigofera aspalathoides*: Structure Elucidation and Determination of Binding Orientation in the Active Sites of the Enzyme by Molecular Docking. *Tetrahedron Lett.* 2004, **45**, 4311-4314.
39. C. Selvam, **Sanjay M. Jachak**. A Cyclooxygenase (COX) Inhibitory Biflavonoid from the seeds of *Semecarpus anacardium*'. *J. Ethnopharmacol.* 2004, **95**, 209-212.
40. C. Selvam, **Sanjay M. Jachak**, K.K. Bhutani. Cyclooxygenase Inhibitory Flavonoids from the stem bark of *Semecarpus anacardium* Linn. *Phytother. Res.* 2004, **18**, 582-584.
41. Shilpi Mittal, Alpeshkumar Malde, C. Selvam, K.H.S. Arun, P. S. Johr, **Sanjay M. Jachak**, P. Rama Rao, P. V. Bharatam and H. P. S. Chawla. Synthesis and evaluation of S-4-(3-thienyl)phenyl-α-methylacetic acid. *Bioorg. Med. Chem. Lett*. 2004, **14**, 979-982.
42. **S. M. Jachak**, F. Bucar, Th. Kartnig. Anti-inflammatory activity of *Biophytum sensitivum* in carrageenin induced rat paw oedema. *Phytother. Res.* 1999, **13**, 73-74.
43. F. Bucar, **S. M. Jachak**, Y.Noreen, Th. Kartnig, L. Bohlin, M. Schubert-Zsilavecz,. Amentoflavone from *Biophytum sensitivum* and its effect on COX - 1/COX-2 catalysed prostaglandin biosynthesis. *Planta Med.* 1998, **64**, 373-374.
44. F. Bucar, **S. M. Jachak**, Th. Kartnig, M. Schubert-Zsilavecz. Phenolic compounds from *Biophytum sensitivum*. *Pharmazie* 1998, **53**, 651-653.

Review articles and book chapter:

45. Grover J, Jachak SM. Coumarins as privileged scaffold for anti-inflammatory drug development. *Curr. Top. Med. Chem.* **2014**, under review.
46. Mishra S, Aeri V, Gaur PK, Jachak SM. Phytochemical, therapeutic and Ethnopharmacological Overview of a Traditionally Important Herb: *Boerhavia diffusa* Linn. *Biomed Res Int.* **Volume 2014**, Article ID 808302, 19 pages (http://dx.doi.org/10.1155/2014/808302).
47. Bairwa K, Grover J, Kania M, Jachak SM. Recent developments in chemistry and biology of curcumin analogues. *RSC Advances* **2014**, 4, 13946-13978.
48. Christina Kourtesi, Anthony R. Ball, Ying-Ying Huang, **Sanjay M. Jachak**, D. Mariano A. Vera, Proma Khondkar, Simon Gibbons, Michael R. Hamblin, George P. Tegos. Microbial Efflux Systems and Inhibitors: Approaches to Drug Discovery and the Challenge of Clinical Implementation. *The Open Microbiol. J.* 2013, **7**(Suppl 1-M3), 34-52.
49. **Sanjay M. Jachak**, Somendu K Roy, Shiv Gupta, Pallavi Ahirrao, Simon Gibbons. Small Molecule Efflux Pump Inhibitors from Natural Products as a Potential Source of Anti-microbial Agents. In: Anti-microbial Drug Discovery: Emerging Strategies. (Eds. Tegos GP, Mylonakis E.) Advances in Molecular and Cellular Microbiology Series. CABI, Oxford, UK. **2012**, *pp. 62-76.*
50. Raju Gautam, **Sanjay M. Jachak**. Recent Developments in Anti-inflammatory Natural Products. *Med. Res. Rev.* 2009, **29**, 767-820.

51. **Sanjay M. Jachak**, Somendu Roy. Small Molecule efflux Pump Inhibitors from Natural Products as Potential Source of Antimicrobial Agents. *Current Research and Information on Pharmaceutical Sciences* 2009, **10**, 62-67.
52. **Sanjay M. Jachak**. PGE synthase inhibitors as an alternative to COX-2 inhibitors. *Curr. Opinion Invest. Drugs* 2007, **8**, 411-415.
53. Raju Gautam, Arvind Saklani, **Sanjay M. Jachak**. Indian Medicinal Plants as a Source of Antimycobacterial Agent. *J. Ethnopharmacol*. 2007, **110**, 200-234.
54. **Sanjay M. Jachak**, Arvind Saklani. Challenges and Opportunities in Drug Discovery from Plants. *Curr. Sci.* 2007, **92**, 1251-1257.
55. **Sanjay M. Jachak**. "Cyclooxygenase Inhibitory Natural Products: Current Status", *Curr. Med. Chem.* 2006, **13**, 659-678.
56. **Sanjay M. Jachak**, Rahul Jain. Current Status of Target-based Antimycobacterial Natural Products. *Anti-Infective Agents in Medicinal Chemistry 2006*, **5**, 123-133.
57. Raju Gautam, Sanjay M. Jachak. Naturally occurring polyphenols with anti-inflammatory activity. Current Research Information in Pharmaceutical Sciences 2007, 8 (October-December Issue), 62-67.
58. **Sanjay M. Jachak**, Arvind Saklani, K. K. Bhutani. Nature-Best combinatorial chemist: Drug Discovery from Plants. *Pharmabiz Exclusive 57th Indian Pharmaceutical Congress* 2005, December 1-3, 169-172.
59. **Sanjay M. Jachak**. Natural Products and COX Inhibition: A Way Forward. Current Research Information in Pharmaceutical Sciences 2004, **5** (October-December Issue), 6-9.
60. **Sanjay M. Jachak**, Gnana Oli R. Natural Products: An important source for Antitubercular Drugs. Current Research Information in Pharmaceutical Sciences 2004, **5** (January- March Issue), 9-11.
61. **Sanjay M. Jachak**. Herbal Drugs as Antidiabetics: An Overview", Current Research Information in Pharmaceutical Sciences 2002, **3** (April-June Issue), 9-13.
62. **Sanjay M. Jachak**. "Natural Products: Potential Source of COX Inhibitors", Current Research Information in Pharmaceutical Sciences 2001, **2** (January- March Issue), 12-15.

Conference (International & National) presentations/abstracts: 25.