

Curriculum Vitae

Name: Navneet Kaur

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Education

Degree	Year	University/Institute	Position
B.Sc. (H.S.) Chemistry	1995-1998	Panjab University Chandigarh	First in university
M.Sc. (H.S.) Chemistry	1998-2000	Panjab University Chandigarh	First in university
PhD	2001-2005	National Institute of Pharmaceutical Education & Research (NIPER), India	

Professional Experience

2005 – 2006: Research Scientist, Jubilant ChemSys Ltd., Noida, India

2006 -2007: Postdoc. Research Fellow, Korea Research Institute of Bioscience & Biotechnology, South Korea

2008 -2009: Postdoc. Research Fellow, The Robert Gordon University, Aberdeen, Scotland (U.K.)

2009 – 2010: Assistant Professor, Thapar University, Patiala

2010- Till date: Assistant Professor, Panjab University Chandigarh

Awards

- Awarded University Medal for standing first in B.Sc. (Hons. School)-Chemistry, 1998.
- Awarded Prof. Prem Singh Silver Medal in Chemistry, 1998.
- Awarded University Medal for standing first in M.Sc. (Hons. School)-Chemistry, 2000.
- Qualified CSIR-UGC (JRF) examination and invited for SPM exam.

Research Recognition / Achievements

- My research work has been featured in Chemical Science Section of Chemistry World (Royal Chemical Society)- December 2008. Prof. A. P. De Silva, (a renowned expert for Chemo- sensors) described that for the first time, this research work brought multi-functionality to quantum dot.

Teaching Experience

A) Nanoscience & Nanotechnology: This includes the teaching of chemistry of nanomaterials and fabrication, carbon nanotubes, supramolecular and surface chemistry.

B) Organic chemistry: This advanced course on organic chemistry deals with the exhaustive study on topics such as: organic reaction mechanisms, reagents in organic synthesis, heterocyclic chemistry and biosynthesis of various classes of natural products.

C) Chemical Biology: This course on chemical biology pertains with providing fundamental knowledge of biomolecules to Masters' students. It comprises of study carbohydrates, lipids, amino acids and proteins, nucleic acids, biocatalysis and hormones.

Research grants

- Design and synthesis of polymeric receptors for ion recognition studies, **DST** (SR/FT/CS-97/2010(G) (2011-2014).
- Design and Synthesis of Quantum Dot-Based Benzimidazole-Coupled Chemosensors (INDO-KOREA joint project) **DST-ROK** (INT/05) (2011-14).

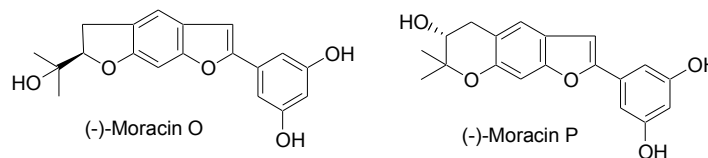
TRH Analogues: Thyrotropin-releasing hormone (TRH) is a unique orally active tripeptide, and is synthesized in the hypothalamus, acts in the

anterior pituitary and control levels of thyrotropin and prolactin. TRH also display stimulatory actions within the CNS. TRH is implicated in the treatment of brain and spinal injury and several CNS disorders.

At present, identity of two TRH receptor subtypes (TRH-R1 and TRH-R2) is known. In my efforts to obtain selective TRH analogues, I had synthesized series of analogues by solution phase as well as solid phase peptide synthesis protocols. For the first time, TRH analogues with high specificity towards TRH-R2 receptor at very low micromolar concentrations are reported. It has been speculated that, selectivity exhibited by some of the TRH analogues reported herein, might lead to peptides that are highly specific in their CNS-effects without endocrine side effects.

Moracin & its Analogues (*First Total Synthesis*):

The great interest emerging in the field of HIF-1 inhibition together with the considerable biological activity of Moracin O and P has provided motivation to contemplate a first total synthesis of these compounds. In addition, the enantioselective synthesis of (R)- and (S)-Moracin O have been achieved from 2,4-dihydroxybenzaldehyde. The absolute stereochemistry was introduced by employing Sharpless' AD reaction.



Book Chapter

Quantum Dot Sensors: Technology and Commercial Applications. Pan Stanford Publishing (**2013**) Printed in USA
Chapter 5: Quantum Dot Probes Based on Energy Transfer Mechanisms, John F. Callan, Bridgeen McCaughan, Colin Fowley, Narinder Singh, Navneet Kaur, and Suban Sahoo.

List of Publications

2013

1. Counterion displacement assay with Biginelli product: Ratiometric sensor for Hg^{2+} and resultant complex as sensor for Cl^- . Kaur, A.; Sharma, H.; Kaur, S.; Singh, N.; Kaur, N. **RSC Adv.** 2013 (DOI: 10.1039/C3RA40236C).
2. ZnO nanoparticles decorated with organic anion receptor: Selective recognition of sulphate anion. Kaur, S.; Kaur, A.; Kaur, N. **Mater. Lett.** 2013 (Accepted Manuscript).
3. Fluorescent primary sensor for zinc and resultant complex as secondary sensor towards phosphorylated biomolecules: INHIBIT logic gate. Kaur, K.; Bhardwaj, V.K.; Kaur, N.; Singh, N. **Inorg. Chim. Acta**, 2013 (In Press), Available online 7 January 2013.

2012

4. A facile synthetic route to diazepinone derivatives via ring closing metathesis and its application for human cytidine deaminase inhibitors. Kim, M.; Gajulapati, K.; Kim, C.; Jung, H.Y.; Goo, J.; Lee, K.; Kaur, N.; Kang, H.J.; Chung, S. J.; Choi, Y. **Chem. Commun.** 2012, 11443-11445.
5. A benzimidazole-based fluorescent sensor for Cu^{2+} and its complex with a phosphate anion formed through a Cu^{2+} displacement approach. Saluja, P.; Kaur, N.; Singh, N.; Jang, D.O. **Tet. Lett.** 2012, 53, 3292-3295.
6. Benzimidazole-based imine-linked chemosensor: chromogenic sensor for Mg^{2+} and fluorescent sensor for Cr^{3+} . Saluja, P.; Sharma, H.; Kaur, N.; Singh, N.; Jang, D.O. **Tetrahedron**, 2012, 68, 2289-2293.
7. Benzimidazole-based fluorescent sensors for Cr^{3+} and their resultant complexes for sensing HSO_4^- and F^- . Saluja, P.; Kaur, N.; Singh, N.; Jang, D.O. **Tetrahedron**, 2012, 68, 8551-8556.

8. Surface decoration of ZnO nanoparticles: A new strategy to fine tune the recognition properties of imine linked receptor Sharma, H.; Kaur, N.; Pandiyan, T.; Singh, N. **Sensor Actuat B: Chem.** 2012, 166-167, 467-472.
9. Imine linked chemosensors coupled with ZnO: Fluorescent chromogenic detection of Al^{3+} . Sharma, H.; Narang, K.; Singh, N.; Kaur, N. **Mater. Lett.** 2012, 84, 104-106.
10. Imine linked 1,8-naphthalimide: Chromogenic recognition of metal ions, density function theory and cytotoxic activity. Sharma, H.; Kaur, N.; Singh, N. **Inorg. Chim. Acta.** 2012, 391, 83-87.
11. Imine coupled ZnO based fluorescent chemosensor for the simultaneous estimation of Al^{3+} and Cr^{3+} . Kaur, N.; Kaur, N.; Singh, N. **Mater. Lett.** 2012, 80, 78-80.
12. Imine linked fluorescent chemosensor for Al^{3+} and resultant complex as a chemosensor for HSO_4^- anion. Kaur, K.; Bhardwaj, V.K.; Kaur, N.; Singh, N. **Inorg. Chem. Commun.** 2012, 18, 79-82.
13. Fluorescent chemosensor for Al^{3+} and resultant complex as a chemosensor for perchlorate anion: First molecular security keypad lock based on Al^{3+} and ClO_4^- inputs. Kaur, K.; Bhardwaj, V.K.; Kaur, N.; Singh, N. **Inorg. Chem. Commun.** 2012, 18, 31-36.
14. Influence of surface modification by 2-aminothiophenol on optoelectronics properties of ZnO nanoparticles; Rana, S.B.; Bhardwaj, V.K.; Singh, S.; Singh, A.; Kaur, N. **J. Experimental Nanoscience**, 2012, 1–15.
15. Synthesis and optical characterization of ZnO nanoparticles capped with 2-aminothiols; Rana, S.B.; Bhardwaj, V.K.; Singh, S.; Singh, A.; Kaur, N. **J Mater Sci: Mater Electron**, 2012, DOI 10.1007/s10854-012-0767-9
Publisher: Springer

2011

16. HIF-1 α inhibitors: Synthesis and biological evaluation of novel moracin O and P analogues. Xia, Y.; Jin, Y.; Kaur, N.; Choi, Y.; Lee, K. **Eur. J. Med. Chem.** 2011, 46, 2386-2396.
17. A benzthiazole-based tripodal chemosensor for Ba^{2+} recognition under biological conditions. Saluja, P.; Kaur, N.; Singh, N.; Jang, D.O. **Tet. Lett.** 2011, 52, 6705-6708.

2010

18. Ratiometric fluorescent detection of Cu(II) in semi-aqueous solution using a two-fluorophore approach Singh, N.; Kaur, N.; McCaughan, B.; Callan, J.F. **Tet. Lett.** 2010, 51, 3385-3387.
19. CNS safety pharmacology of newer TRH Analog-L-pGlu-(1-benzyl)-L-His-LProNH₂. Sharma, S.S.; Rajput, S.K.; Ingole, S.; Jain, R.; Kaur, N.; Monga, V.; Meena, C.L. **J. Pharmacol. Toxicol. Methods**, 2010, 62, e21-e22.
20. AND molecular logic using semiconductor quantum dots. Kaur, N.; Singh, N.; McCaughan, B.; Callan, J. F. **Sensors and Actuators B: Chem** 2010, 144, 88–91.

2009

21. A multifunctional tripodal fluorescent probe: "Off-On" detection of sodium as well as two-input AND molecular logic behavior. Kaur, N.; Singh, N.; Cairns, D.; Callan, J. F. **Org. Lett.** 2009, *11*, 2229-2232.
22. First total synthesis of Moracin O and Moracin P and establishment of the absolute configuration of Moracin O. Kaur, N.; Xia, Y.; Jin, Y.; Dat, N.T.; Gajulapati, K.; Choi, Y.; Hong, Y.-S.; Lee, J.J.; Lee, K. **Chem. Commun.**, 2009, 1879-1881.
23. An "Off-On" sensor for fluoride using luminescent CdSe/ZnS Quantum Dots. Mulrooney, R. C.; Singh, N.; Kaur, N.; Callan, J. F. **Chem. Commun.**, 2009, 686-688.
24. A dual detecting polymeric sensor: chromogenic naked eye detection of silver and ratiometric fluorescent detection of manganese. Singh, N.; Kaur, N.; Choitir, C. N.; Callan, J. F. **Tet. Lett.** 2009, *50*, 4201 – 4204.
25. A new fluorescent chemosensor for iron (III) based on the β -aminobisulfonate receptor. Singh, N.; Kaur, N.; Dunn, J.; MacKay, M.; Callan, J. F. **Tet. Lett.** 2009, *50*, 953-956.
26. A polymeric sensor for the chromogenic and luminescent detection of anions. Singh, N.; Kaur, N.; Dunn, J.; Behan, R.; Mulrooney, R. C.; Callan, J. F. **Eur. Polymer. J.** 2009, *45*, 272-277.
27. Incorporation of siderophore binding sites in a dipodal fluorescent sensor for Fe(III). Singh, N.; Kaur, N.; Callan, J. F. **J Fluoresc.**, 2009, *19*, 649-654.
28. Fluorescent recognition of potassium and calcium ions using functionalised CdSe / ZnS Quantum Dots. Singh, N.; Mulrooney, R. C.; Kaur, N.; Callan, J. F. **J Fluoresc.**, 2009, *19*, 777-782.
29. A novel class of highly potent multidrug resistance reversal agents: Disubstituted adamantyl derivatives. Min, K. H.; Xia, Y.; Kim, E. K.; Jin, Y.; Kaur, N.; Kim, D. K.; Jung, H. W.; Choi, Y.; Park, M.-K.; Min, Y. K.; Lee, K.; Lee, K. **Bioorg. Med. Chem. Lett.** 2009, *19*, 5376-5379.
30. Antiepileptic potential and behavioral profile of L-pGlu-(2-propyl)-L-His-L-ProNH₂, a newer thyrotropin-releasing hormone analog. Rajput, S. K.; Krishnamoorthy, S.; Pawar, S. C.; Kaur, N.; Monga, V.; Meena, C. L.; Jain, R.; Sharma, S. S. **Epilepsy & Behavior**, 2009, *14*, 48-53.
31. Neuropharmacological profile of L-pGlu-(1-benzyl)-L-His-L-ProNH₂, a newer thyrotropin-releasing hormone analog: Effects on seizure models, sodium current, cerebral blood flow and behavioral parameters. Rajput, S. K.; Singh J. N.; Ingole, S.; Jain, G.; Kaur, N.; Monga, V.; Meena, C. L.; Jain, R.; Sharma, S. S. **Epilepsy Research**, 2009, *87*, 223-233.

2008

32. Nanoparticle based chromogenic chemosensor for the simultaneous detection of multiple analytes. Singh, N.; Mulrooney, R. C.; Kaur, N.; Callan, J. F. **Chem. Commun.**, 2008, 4900-4902.
33. Synthesis and anticancer activity of geldanamycin derivatives derived from biosynthetically generated metabolites. Lee, K.; Ryu, J. S.; Jin, Y.; Kim, W.; Kaur, N.; Chung, S. J.; Jeon, Y.-J.; Park, J.-T.; Bang, J. S.; Lee, H. S.; Kim, T. K.; Lee, J. J.; Hong, Y.-S. **Org. Biomol. Chem.** 2008, 340-348.

34. Chemistry and biology of thyrotropin-releasing hormone (TRH) and its analogs. (**Review Article**). Monga, V.; Meena, C. L.; Kaur, N.; Jain, R. **Curr. Med. Chem.** 2008, *15*, 2718-2733.
35. A ratiometric fluorescent probe for magnesium employing excited state intramolecular proton transfer. Singh, N.; Kaur, N.; Mulrooney, R. C.; Callan, J. F. **Tetrahedron Lett.** 2008, *49*, 6690-6692.
36. Synthesis of amide and urea derivatives of benzothiazole as Raf-1 inhibitor. Song, E. Y.; Kaur, N.; Park, M.-Y.; Jin, Y.; Lee, K.; Kim, G.; Lee, K. Y.; Yang, J. S.; Shin, J. H.; Nam, K.-Y.; No, K. T.; Han, G. **Eur. J. Med. Chem.** 2008, *43*, 1519-1524.
37. Facile Synthesis of N- α -Boc-1,2-dialkyl-L-histidines: Utility in the synthesis of thyrotropin-releasing hormone (TRH) analogs and evaluation of the CNS activity. Monga, V.; Meena, C. L.; Kaur, N.; Kumar, S.; Pawar, C.; Sharma, S. S.; Jain, R. **J. Heterocyclic Chem.** 2008, *45*, 1603-1608.
38. Selectivity-based QSAR approach for screening and evaluation of TRH analogs for TRH-R1 and TRH-R2 receptors subtypes. Kadam, R. U.; Chavan, A. G.; Monga, V.; Kaur, N.; Jain, R.; Roy, N. **J. Mol. Graphics and Modelling**, 2008, *27*, 309-320.

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39. Modifications of the pyroglutamic acid and histidine residues in thyrotropin-releasing hormone (TRH) yield analogs with selectivity for TRH receptor Type 2 over Type 1. Kaur, N.; Monga, V.; Lu, X.; Gershengorn, M. C.; Jain, R. **Bioorg. Med. Chem.** 2007, *15*, 433-443.
40. Facile regiospecific syntheses of N- α ,N-1(τ)-dialkyl-L-histidines. Nayak, S. K.; Monga, V.; Kaur, N.; Jain, R. **J. Heterocyclic Chem.** 2007, *44*, 1265-1269.
41. Synthesis, receptor binding, and activation studies of N(1)-alkyl-L-histidine containing thyrotropin-releasing hormone (TRH) analogues. Kaur, N.; Monga, V.; Josan, J. S.; Lu, X.; Gershengorn, M. C.; Jain, R. **Bioorg. Med. Chem.**, 2006, *14*, 5981-5988.
42. Low affinity analogs of thyrotropin-releasing hormone are super agonists. Engel, S.; Neumann, S.; Kaur, N.; Monga, V.; Jain, R.; Northup, J.; Gershengorn, M. C. **J. Biol. Chem.** 2006, *281*, 13103-13109.
43. Thyrotropin-releasing hormone (TRH) analogues that exhibit selectivity to TRH receptor subtype 2. Kaur, N.; Lu, X.; Gershengorn, M. C.; Jain, R. **J. Med. Chem.**, 2005, *48*, 6162-6165.
44. Facile one-step synthesis of N- α -Boc-1-alkyl-L-histidines. Kaur, N.; Monga, V.; Jain, R. **Tet. Lett.** 2004, *45*, 6883-6885.
45. Antimalarial activities of ring-substituted bioimidazoles. Jain, R.; Vangapandu, S.; Jain, M.; Kaur, N.; Singh, S.; Singh, P. P. **Bioorg. Med. Chem. Lett.** 2002, *12*, 1701-1704.

List of Patents

1. Jain, R.; Monga, V.; **Kaur, N.** A process for the synthesis of CNS active thyrotropin-releasing hormone analogs. 2006, WTO Indian Patent Application No. 2066/DEL/2006.

2. Jain, R.; Monga, V.; **Kaur, N.**; Sharma, S. S.; Kumar, S.; Roy, N.; Majumdar, J.; Agarwal, S.; Pawar, C.; Kadam, R. U.; Chavan, A. CNS effective thyrotropin-releasing hormone analogs. 2006, WTO Indian Patent Application No. 2065/DEL/2006.

Research Work Presented in Symposium/Conference/Seminars

1. Supra-Nano 2008 (Joint RSC Meeting), University of Birmingham, England (Dec, 16-18, 2008).
2. New frontiers in medicinal chemistry, South Korea (June, 20-21, 2007).
3. International Conference on Chemistry-Biology Interface: Synergistic New Frontiers, New Delhi, India (Nov. 21-26 2004).
4. IUPAC International Conference on Biodiversity and Natural Products: Chemistry and Medicinal Applications, New Delhi, India (Jan. 26-31, 2004).
5. 13th annual National Symposium, Panjab University, Chandigarh, India (March 11, 2000).