

Vivekanandan Kannan Ph.D

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SUMMARY

An inquisitive analytical scientist with ten years of industrial experience in biotechnology, pharmaceutical and petrochemical field and proven ability to advance drug discovery and drug development projects. Strong expertise in mass spectrometry based characterization and quantitation for solving problems related to proteins and small molecules.

Technical Expertise: Mass Spectrometry (LCMSMS; Quattro Micro; TSQ Quantum Ultra, QSTAR-XL, Agilent 1100 Ion Trap; GCMS Autospec Ultima); HPLC, SEC, FPLC, PAGE, protein purification and sample preparation in biological matrices

PROFESSIONAL EXPERIENCE

1. Scientific Manager Biocon Limited, Bangalore, India June-2006 to Till Date

Bioanalytical group leader with three direct reports

- Initiated setting up the laboratory for drug quantitation in biological matrices for proteins, peptides and small molecule drugs
- Streamlined laboratory for GLP compliance and wrote protocols (SOP, IOP)
- Principal Investigator for a GLP study and designed study plan for execution of reports.
- Coordinated with QA, regulatory and other projects teams for completion of work

Achievements:

1. Developed validated methods for detection of Insulin and analogs by LCMSMS
2. Quantitation of Atosiban in rat plasma (Submitted to J. Chromatography B)
3. Methods transferred to CRO's in India and UK
4. Identification of post translational modification in glargine by mass spectrometry (patents filed in 2008; one paper in rapid communications in mass spectrometry 2009)

2. Manager Dabur Pharma, Sahibabad, India, May -2003 to May-2006

Mass spectrometry group leader with three direct reports

- Initiated setting up the laboratory for small molecule anticancer drug characterization by mass spectrometry, drug quantitation in biological matrices for small molecule drugs and trace level quantitation of antibiotics in honey
- Streamlined laboratory for GLP compliance and wrote protocols (SOP, IOP)
- Designed study plan for execution of reports.
- Coordinated with QA, regulatory and other projects teams for completion of work

Achievements:

1. Submitted analytical development reports for ANDA and DMF
2. Developed methods for identification of drug metabolites for *in-vivo* and *in-vitro* studies
3. Developed methods for quantitation of a peptide docetaxel prodrug in mouse plasma
4. Patent granted for identification of intermediates in oxaliplatin
5. Three published papers on small molecule quantitation and on characterization

3. Application Scientist Waters, India Sep-2002 to Mar-2003

Market research, application reports and application support to mass spectrometry customers

4. Research officer Indian Oil Corporation Limited Jul-1999 to Aug-2002

Mass spectrometry group leader with one direct report

- Initiated setting up the laboratory for high resolution mass spectrometry in volatiles (Petroleum Fractions) and for characterizing additives in oils
- Streamlined laboratory for ISO compliance and wrote protocols (SOP, IOP)
- Designed study plan for execution of reports.

Achievements

1. Published one paper in tribotest journal.
2. Application of mass spectrometry for characterization of vegetable oils and biodiesel fuels (Technical report submitted)
3. Characterisation of active ingredients in greases and oils by mass spectrometry
4. Presented posters in 'Petrotech 2000 and 2002 at Vigyan bhavan, New Delhi

EDUCATION

1992-1997	Ph.D, Department of Chemistry, Indian Institute of Technology, Kanpur (www.iitk.ac.in), India.
1990-1992	M.Sc., Chemistry, American College, Madurai, India, First Division
1987-1990	B.Sc., Chemistry, American College, Madurai, India, First Division

POSTDOCTORAL EXPERIENCE

1997-1998	Project Scientist, Department of Chemical Engineering, Indian Institute of Technology, Kanpur, India
1998-1999	NSF Postdoctoral Fellow, Department of Chemistry and Biochemistry, Temple University, Philadelphia, USA

Patents:

1. P. Hazra, N. Dave, K. Vivekanandan, S. Tiwari, A. Goel, H. Iyer, N. Roy, K. Venkatesan, A. Vasudevan, A. Jagadish, G. Schdev and M. Patale, *A Method of obtaining a purified, biologically active heterologous protein*. PCT filed, Apr-**2008**.
2. P. Hazra, N. Dave, K. Vivekanandan, S. Tiwari, A. Goel, H. Iyer, N. Roy, K. Venkatesan, A. Vasudevan, A. Jagadish, G. Schdev and M. Patale, *A Method of obtaining a purified, biologically active heterologous protein*. Indian Patent filed, Feb-**2008**.
3. G. C. Maikap, B. Raj, P. Kumar, K. Vivekanandan, C. Belwal. *A process for the preparation of an anti-tumour platinum(II)-complex*. Patent WO **2005**;075489, 05.02.2004

Publications:

1. K. Vivekanandan, G. Deepak, D. Nitesh, K. Anand, I. Harish, *Quantitative Determination of Oxytocin Receptor Antagonist Atosiban in Rat Plasma by Liquid Chromatography Tandem Mass Spectrometry* (under review in J. Chromatography B)

2. K. Vivekanandan, P. Hazra, A. Khedkar, and H. Iyer, *A Tandem mass spectrometric approach to the identification of O-linked glargine glycoforms expressed in pichia pastoris*, Rapid. Commun. Massspectrom. **2009**,23,1035-1042, DOI: 10.1002/rcm.3965
3. K. Vivekanandan, M. Guruswamy, S. Prasad, R. Mukherjee, A. C. Burman, *Identification of isocephalomannine in presence of cephalomannine isomers and alkali metal ion adducts in a paclitaxel active pharmaceutical ingredient using electrospray tandem mass spectrometry*, Rapid Commun. Massspectrom. **2006**,20: 1731-1735, doi:10.1002/rcm.2500
4. K. Vivekanandan, M. Guru Swamy, G. C. Maikap, S. Prasad, R. Mukherjee, A. C. Burman, *Identification of degradation products from aqueous carboplatin injection samples by electrospray mass spectrometry*. Int. J. Pharm. **2006**, 313, 214-221, [doi:10.1016/j.ijpharm.2006.02.002](https://doi.org/10.1016/j.ijpharm.2006.02.002)
5. K. Vivekanandan, M. Guru Swamy, S. Prasad, R. Mukherjee, *A Simple method of isolation of chloramphenicol in honey and its estimation by liquid chromatography coupled to electrospray ionisation tandem mass spectrometry*. Rapid Commun. Massspectrom., **2005**,19, 21, 3025 – 3030, doi:10.1002/rcm.2169
6. K. Vivekanandan, V. Sugumaran, A. Chopra, B. Basu, S. Srivastava and A. K. Bhatnagar. *Determination of Molecular weight Distribution Parameters of Polymers and Additives by Field Desorption Mass Spectrometry*. Tribotest Journal, **2002**, 9-2, 93
7. E. Strable, J.W.M. Bulte, B. Moskowitz, K. Vivekanandan, M. Allen and T. Douglas, *Synthesis and Characterization of Soluble Iron Oxide- Dendrimer Composites* , Chem. Mater.**2001**, 2201-2209, **DOI:** 10.1021/cm010125i
8. K.R. Justin Thomas, V Chandrasekhar, K.Vivekanandan, G.T .Senthil Andavan, S.Nagendran, S. Kingsley, E.R.T. Tiekink, *Tridendate N3 capping coordination behaviour of potentially multi - site coordinating cyclotriphosphazenes; Synthesis and spectroscopic studies of 2,2 - spiro(1,3 - propane diamino) -4,4,6,6 - tetrakis(3,5- dimethylpyrazolyl) cyclotriphosphazene and their mononuclear complexes X-Ray structure of ATPCTP.CoCl2*. Inorganica chimica Acta. **1999**, 286, 127, [doi:10.1016/S0020-1693\(98\)00387-9](https://doi.org/10.1016/S0020-1693(98)00387-9)
9. V. Chandrasekhar, A. P. Athimolam, K. Vivekanandan and S. Nagendran, *New Approach for the assembly of a multi-site coordinating polymeric ligand: Synthesis of a pendant pyrazolyl cyclotriphosphazene containing polymer*. Tetrahedron Letters, **1999**, 40, 1185-1186, [doi:10.1016/S0040-4039\(98\)02560-X](https://doi.org/10.1016/S0040-4039(98)02560-X)

10. V. Chandrasekhar, K. Vivekanandan, S. Nagendren, G. T. Senthil Andavan, . R. weathers, J. . Yarbrough and A. W. Cordes, , *Cycloalkylaminocyclo – and Polyphosphazenes: X- Ray Crystal Structures of gem-Tetrakis(cyclohexylamino) dichloro cyclo triphosphazene and Octakis(cyclopropylamino) cyclo tetra phosphazene.* Inorg. Chem. **1998**, 37, 6192-6198, DOI:10.1021/ic980520j
11. K. Vivekanandan and V. Chandrasekhar. *Synthesis and Characterization of Pendant cyclotriphosphazene polymer.* Polymer Science Recent Advances, Ed. I. S. Bharadwaj, Allied Publishers, **1994**, 1, 473

Reports:

1. K. Vivekanandan, G. Deepak , *Repeated Dose comparative 28-day toxicity study with Atosiban (Biocon Limited) and Tractocile (ferring Pharmaceuticals) in Wistar Rats with Toxicokinetics by intravenous injection (GLP Study)* RND/BIA/1140/09/001, Jan 2009.
2. K. Vivekanandan, G. Deepak , *Single dose acute toxicity study followed by dose range finding toxicity study with atosiban in wistar rats by intravenous injection;* RND/BIA/1140/08/001, Oct-2008.
3. K. Vivekanandan, G. Deepak , *Bio-Equivalence study with Biocon's Gluconatide vs. amylin's Byetta in Sprague Dawley Rat (Non GLP study);* RND/BIA/1137/09/001, Oct-2008
4. K. Vivekanandan, G. Deepak , *Quantification of Atosiban in rat plasma by LCMSMS.* Validation Report: BRED/VALD/1140/0001, Aug-2008.
5. K. Vivekanandan, G. Deepak. *Quantification of Glargine in human plasma by LCMSMS,* Technical report: RND/TR/1111/08/021
6. K. Vivekanandan, G. Deepak, *Quantification of voglibose in pharmaceutical formulations by LCMSMS.* Technical Report: RND/TR/Bio-109/08/005
7. K. Vivekanandan. *Insulin Glargine Analytical Development Report.* Feb-2007.
8. V. Sugumaran, K. Vivekanandan, W. R. Kalsi, Anju Chopra and M. C. Jain, *Identification of components in the Diaromatic Fraction of Light Cycle Oil by Gas chromatography Mass spectrometric technique,* IOC R&D Report No. 010044, July 2001
9. K. Vivekanandan, S. Vatsala, Ravindra Kumar, A. K. Gupta, A. S. Sarpal, A. K. Mehta and A. K. Bhatnagar, *Application of Mass Spectrometry for Characterisation of Biodiesel Fuels,* IOC R&D Internal Report June-2002

10. K. Vivekanandan, S. Vatsala, Mary Joseph, G. S. Kapoor, A. K. Gupta and A. S. Sarpal, *Field Desorption Mass Spectrometry of Multifunctional Lubricant Additives: Part I Zinc dialkyl/diaryl dithiophosphates*, IOC R&D Report June-2002
11. K. Vivekanandan and S. K. Gupta .*Optimization of Variables for the free radical polymerization of methyl methacrylate under isothermal condition*. Report submitted to Chem. Engg. Dept. IIT. Kanpur- 1999

Conferences:

1. K. Vivekanandan, Deepak gadamsetty, *Identification of Glargine glycoforms by mass spectrometry-poster presentation*, Bangalorebio-2009, Bangalore, June **2009**.
2. K. Vivekanandan, *Bioanalysis by LCMSMS-Invited Talk* , National seminar on current trends in Bioanalytical techniques, Krupanidhi college of Pharmacy, Bangalore, Feb-**2009**.
3. K. Vivekanandan, *Biopharmaceuticals-To greener pastures-Invited Talk*, National symposium on frontier areas in chemistry, American college, Madurai, India, Jan **2008**
4. K. Vivekanandan, *Application of Mass Spectrometry for Bio-Pharmaceutical Industry-Invited Talk*, Indian Society for Mass Spectrometry (ISMAS) meeting, Goa, India. Feb **2007**.
5. K. Vivekanandan, *Origin of Chloramphenicol in Honey and its Quantification by Liquid Chromatography Tandem Mass Spectrometry-Poster Presentation*, Indian Society for Mass Spectrometry (ISMAS) 12th International Symposium, Munnar, Kerala, India. Jan **2006**.
6. K. Vivekanandan, *Electrospray Mass spectrometry for proteomics-Invited Talk*, Bioinformatics meet, Stella Mary's College, Chennai, India, **2005**
7. K. Vivekanandan. *LCMSMS for Pharma Industry-Invited Talk*., ISMAS Workshop, Shimla, India **2004**
8. K. Vivekanandan, S. Vatsala, Ravindra Kumar, A. K. Gupta, A. S. Sarpal, A. K. Mehta and A. K. Bhatnagar, *Application of Mass Spectrometry for Characterisation of Biodiesel Fuels-poster presentation*. Petrotech – **2003**, NewDelhi. India.
9. K. Vivekanandan, S. Vatsala, A. K. Gupta, A. S. Sarpal, A. K. Mehta and A. K. Bhatnagar, *Determination of Molecular Weight distribution Parameters of Polymers and Additives by Field Desorption Mass Spectrometry-poster presentation*. Petrotech – **2001**, NewDelhi, India

10. K. Vivekanandan, *Polymer and Additives by Mass Spectrometry*, ISMAS Workshop on Mass Spectrometry, Dec-2000, Goa

MENTORED STUDENTS

1. Mr. Suman Labala, M. Pharm., Manipal University, July 2009.
2. Ms. Stella Maria M.Sc., Stella Mary's College, Chennai, Quantification of peptides and proteins by Mass spectrometry, May 2009.
3. Mr. Deepak Gadamshetty M.Sc., Scientist, Biocon limited, Mar-2007- till date
4. Ms. Veenu Tyagi M.Sc., Application of LCMS for pharmaceutical Industry, Shaheed Rajguru College of Applied Sciences for Women, Delhi July, 2005
5. Ms. Richa Tamini M.Sc., Application of mass spectrometry for the discovery of cancer biomarkers, Banasthali Vidyapeeth, Rajasthan, July, 2005.
6. Mr. M. Guruswamy M.Sc., Research Assistant, Dabur Research Foundation, Oct 2004-May 2003.
7. Ms. Keerthi Khandelwal M.Sc., Theory and Applications of LCMSMS in Pharmaceutical Industries, Jiwaji University, Gwalior, Jul 2004
8. Ms. Vatsala Sugumaran M.Sc., Research Officer, Indian Oil Corporation Limited, Faridabad, Aug-1999 to Jul-2002.

GCMS/LCMS Training:

1. Sep-2007. Thermo Training Institute, West Palm Beach, Florida, USA. Trained on TSQ Quantum Operations.
2. Jun-2003, Dabur Research Foundation, Sahibabad, India Trained on Micromass 'Quattro Micro' Triple Quadrupole LCMSMS for instrument operation and application by Micromass engineers and Chemists. Training focused on core software, Quantification, metabolite study troubleshooting and maintenance.
3. Nov-2002, Waters LCMSMS training, Bombay, India Attended two days workshop on LCMS organized by waters India Pvt. Limited
4. Oct-2002, National Centre for Biological Studies, Bangalore, India Attended training on Hybrid Quadrupole Time-of-Flight (Q-TOF) Mass Spectrometer for Protein analysis and peptide sequencing
5. Dec-1999, Indian Oil Corporation R & D Centre, Faridabad, India Trained on Micromass Autospec Ultima High resolution GCMS. Small Molecule analysis, Quantification Instrument maintenance and troubleshooting.

OTHERS

- Reviewer of Rapid Communications in Mass spectrometry and Food Additives and Contaminants Journal
- Member of Indian and British mass spectrometry societies