

CURRICULUM VITAE

Rajkumar Venkatadri

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EDUCATION:

Doctor of Philosophy (Ph.D.) – Biosciences – 2011

Area: Studies on chemopreventive secondary metabolites from selected medicinal plants as a potent anticancer drug; VIT University, Vellore, India.

Master of Science (M.Sc.) - Biomedical Genetics – 2006 - VIT University, Vellore, India.

Bachelor of Science (B.Sc.) – Biochemistry – 2004 - Bharathiar University, Coimbatore, India.

CURRENT RESEARCH:

- Impact of oxidative stress-regulated angiogenesis in pulmonary fibrosis.
- Evaluating roles of ROS inhibitors in pulmonary fibrosis.
- Inter-relation of signaling pathways during onset of pulmonary fibrosis.
- Investigation of potential roles of miRNAs in association with breast cancer progression and metastasis.
- Understanding the association of caspase activation and apoptosis in breast cancer progression.
- Anti-tumorigenic potential of novel digitoxin analogues.

PROFESSIONAL EXPERIENCE:

- Post Doctoral Fellow (March 2014 to Present) at Department of Pharmaceutical Sciences, School of Pharmacy, Hampton University, Hampton, Virginia.
- Post Doctoral Fellow (October 2012 to March 2014) at Johns Hopkins University School of Medicine, Baltimore, Maryland.
- Junior Research Fellow (3 Years 8 Months) from 2007 to 2010 in a Life Sciences Research Board (LSRB) funded project “Investigation of anticancer properties of Picrorhiza kurroa, Acorus calamus and Oroxyllum indicum” [Ref. No. DLS/81/48222/LSRB- 114/EPB/2006 dt. 21.12.2006].

PUBLICATIONS:

1. Hongyi Cai , Arun Kapoor, Ran He, **Rajkumar Venkatadri**, Michael Forman, Gary H Posner and Ravit Arav-Boger. 2013. In vitro combination of anti-Cytomegalovirus compounds acting through different targets – role of the slope parameter and insights into mechanisms of action. *Antimicrobial Agents and Chemotherapy* 58(2), 986-994.
2. Hongyi Cai, Hua-Yu L Wang, **Rajkumar Venkatadri**, De-Xue Fu, Michael Forman, Sumit O Bajaj, Hongyan Li, George A O’Doherty, Ravit Arav-Boger. 2014. Digitoxin Analogues with Improved Anticytomegalovirus Activity. *ACS Medicinal Chemistry Letters* 5(4), 395-399.
3. Ran He, Michael Forman, Bryan Mott, **Rajkumar Venkatadri**, Gary Posner, and Ravit Arav-Boger. 2013. The Unique and Highly-Selective Anti-Cytomegalovirus Activities of Artemisinin-Derived Dimer Diphenyl Phosphate Stem From Combination of Dimer Unit and a Diphenyl Phosphate Moiety. *Antimicrobial Agents and Chemotherapy* 57(9), 4208-4214.
4. Arun Kapoor, Ran He, **Rajkumar Venkatadri**, Michael Forman and Ravit Arav-Boger. 2013. Wnt Modulating Agents Inhibit Human Cytomegalovirus Replication. *Antimicrobial Agents and Chemotherapy* 57(6), 2761-2767.
5. **Rajkumar V.**, Gunjan Guha and Ashok Kumar R. 2012. Isolation and bioactivity evaluation of two metabolites from the methanolic extract of *Oroxylum indicum* stem bark. *Asian Pacific Journal of Tropical Biomedicine* S7-S11.
6. V. Cijo George, D. R. Naveen Kumar, **V. Rajkumar**, P. K. Suresh and R. Ashok Kumar. 2012. Quantitative Assessment of the Relative Antineoplastic Potential of the n-butanolic Leaf Extract of *Annona Muricata* Linn. in Normal and Immortalized Human Cell Lines. *Asian Pacific Journal of Cancer Prevention* 13, 699-704.
7. DR Kumar, V Cijo George, **V Rajkumar**, R Ashok Kumar Gunjan Guha and Ashok Kumar R. 2012. Cytoprotective effect of (-)-Epigallocatechin [EGC] against Chlorpyrifos-induced cytotoxicity. *Journal of Pharmacy Research* 4(6).
8. **Rajkumar V.**, Gunjan Guha and Ashok Kumar R. 2011. Antioxidant and anti-neoplastic activities of *Picrorhiza kurroa*. *Food and chemical toxicology* 49, 363-369.
9. **V Rajkumar**, Gunjan Guha and R Ashok Kumar. 2011. Apoptosis induction in MDA-MB-435S, Hep3B and PC-3 cell lines by *Rheum emodi* rhizome extracts. *Asian Pacific Journal of Cancer Prevention* 12, 1197-1200.
10. **Venkatadri Rajkumar**, Gunjan Guha and Rangasamy Ashok Kumar. 2011. Anti-neoplastic activities of *Bergenia ciliata* rhizome. *Journal of Pharmacy Research* 4(2), 443-445.

11. **Venkatadri Rajkumar**, Gunjan Guha and Rangasamy Ashok Kumar. 2011. Induction of apoptosis in MDA-MB-435S, HEP3B and PC-3 cell lines by extracts of *O. indicum*. Journal of Pharmacy Research 4(7), 2054-2056.
12. Rameshbabu Arun Prabhu, **Venkatadri Rajkumar**, Rangasamy Ashok Kumar. 2011. Analysis of chromium toxicity in Hep3B cells. Journal of Pharmacy Research 4(2), 459-461.
13. D. R. Naveen Kumar, Cijo George V, **Venkatadri Rajkumar** and Rangasamy Ashok Kumar. 2011. Cytoprotective effect of (-) Epigallocatechin [EGC] against Chlorpyrifos-induced cytotoxicity. Journal of Pharmacy Research 4(6), 1743-1744.
14. **Venkatadri Rajkumar**, Gunjan Guha, Lazar Mathew and Rangasamy Ashok Kumar. 2010. Curative potential of *Acorus calamus* rhizome extracts against oxidative stress to biomolecules. Journal of Pharmacy Research, 3(4), 763-768.
15. R. Ashok Kumar, **V. Rajkumar**, Gunjan Guha and Lazar Mathew. 2010. Differential therapeutic potentials of *Oroxylum indicum* bark extracts. Chinese Journal of Natural Medicines, 8(2), 0121- 0126.
16. **Rajkumar V.**, Gunjan Guha and Ashok Kumar R. 2010. Therapeutic potential of *Acalypha fruticosa*. Food and chemical toxicology 48, 1709-1713.
17. **Rajkumar V.**, Gunjan Guha and Ashok Kumar R. 2010. Antioxidant and anticancer potentials of *Rheum emodi* rhizome extracts. Evidence Based Complementary and Alternative Medicine, 2011.
18. **Rajkumar V.**, Gunjan Guha, Ashok Kumar R. and Lazar Mathew. 2010. Evaluation of antioxidant activities of *Bergenia ciliata* rhizome. Records of natural products 4:1, 38-48.
19. Gunjan Guha, **V. Rajkumar**, Lazar Mathew and R. Ashok Kumar. 2010. Antioxidant potential and DNA protection efficiency of Indian tribal medicinal plants. Turkish Journal of Biology, 35(2), 233-242.
20. Gunjan Guha, **V. Rajkumar**, R. Ashok Kumar and Lazar Mathew. 2010. Aqueous extract of *Phyllanthus amarus* inhibits chromium(VI)-induced toxicity in MDA-MB-435S cells. Food and Chemical Toxicology 48: 396-401.
21. Gunjan Guha, **V. Rajkumar**, R. Ashok Kumar. 2010. Polyphenolic constituents of methanolic and aqueous extracts of *Vitex negundo* render protection to Hep3B cells against oxidative cytotoxicity. Food and Chemical Toxicology 48, 2133-2138.
22. Gunjan Guha, **V. Rajkumar**, R. Ashok Kumar. 2010. Antimycin A-induced mitochondrial apoptotic cascade is mitigated by phenolic constituents of *Phyllanthus amarus* aqueous extract in Hep3B cells. Food and Chemical Toxicology 48, 3449- 3457.

23. **Rajkumar V.**, Gunjan Guha, Ashok Kumar R. and Lazar Mathew. 2009. Evaluation of cytotoxic potential of *Acorus calamus* rhizome. *Ethnobotanical Leaflets* 13, 832-39.

24. Gunjan Guha, **V. Rajkumar**, R. Ashok Kumar and Lazar Mathew. 2009. Therapeutic potential of polar and non-polar extracts of *Cyanthillium cinereum* *in vitro*. *Evidence Based Complementary and Alternative Medicine*, 2011.

25. Gunjan Guha, **V. Rajkumar**, R. Ashok Kumar and Lazar Mathew. 2009. Antioxidant activity of *Lawsonia inermis* extracts inhibit chromium(VI)-induced cellular and DNA toxicity. *Evidence Based Complementary and Alternative Medicine*, 2011.

RESEARCH SKILLS:

- **Animal cell culture:** Establishment and maintenance of monolayer cultures (CRL-1490, Vero, HFF, MRC-5, CCL-158, Hep3B, HepG2, HeLa, PC-3, WRL-68, MDA-MB-231, MDA-MB-435S, MCF-7, MEF, TAX1BP1 and U373 and suspension cultures (lymphocytes); phase contrast microscopic studies; cryo-preservation of cell lines.

- **Cell viability/toxicity studies:** XTT, MTT, Cell titer glo and trypan blue.

- **Molecular Biology:** Isolation of genomic DNA (animal and plants), plasmid DNA and mtDNA (from animal cell lines); DNA amplification (PCR); gel electrophoresis (agarose and PAGE); Paper chromatography; Thin layer chromatography; Real time PCR; RFLP studies; plasmid transduction experiments; hybridization techniques – Western; Transfection experiments for gene overexpression and knockdown; Plasmid transformation, colony selection and plasmid amplification; Immunofluorescence (IFA).

- **Biochemical analyses:** Antioxidant efficacy studies (H₂O₂, OH, DPPH, ABTS, FRAP, ORAC & reducing power assays) of natural metabolites; estimation of lipid peroxidation levels in cell homogenate by TBA (thiobarbituric acid)-malondialdehyde assay; estimation of total phenolics in natural products and physiological fluids; protein estimation.

- **Phytochemical analyses:** Extraction of metabolites from plants and their downstream processing.

- **Virology:** Viral amplification; Luciferase assay for HCMV; Viral titration by plaque assay.

- **Apoptosis and mitochondrial analyses:** Apoptosis testing by Cellular DNA fragmentation ELISA; oxidative stress-driven mtDNA mutation and damage study using 8-hydroxy-2'-deoxyguanosine (8-OHdG) level estimation; studies on cytosolic abundance of apoptotic factors like Cytochrome c, Caspases 3, 8 and 9, Cleaved caspases 3, 8 and 9 ; Hoechst/PI staining of cells.

- **Statistical analyses:** Data analysis, SE/SD estimation, sample homogeneity/variance analysis, working knowledge of MATLAB, MS Excel, SigmaPlot and GraphPad Prism.
- **Bioinformatics:** BLAST, FASTA, in silico PCR, Predicting the secondary structure of a protein sequence.
- **Animal Experimentation:** Handling of Mouse, Rat and Rabbits. Tail vein injection, Subcutaneous injection, Blood collection from Rat eye, Pancreatectomy in Rat and Mouse, Rat feeding methods, sacrifice and anesthesia administration, Bone marrow chromosomal preparation from mice. Dissection of Rat Liver, Kidney and Brain for homogenate preparation for antioxidant assays.

SCIENTIFIC PRESENTATIONS:

- Investigation of antioxidant and cytotoxic activity of methanolic and aqueous extracts of *Picrorhiza kurroa*, February 07, 2008., Vellore Institute of Technology, Vellore - 632 014.
- Studies on chemopreventive secondary metabolites from selected medicinal plants as a potent anticancer drug May 6, 2011, Vellore Institute of Technology, Vellore - 632 014.

WORKSHOPS / SEMINARS / SYMPOSIUM ATTENDED:

- National Symposium on Recent Trends in Health Science Research (2006), Vellore Institute of Technology, Vellore, India.
- One-Day Seminar on Research Methodologies in Biosciences (2006). Academic Staff College, Vellore Institute of Technology, Vellore, India.
- Two Days Hands-on Training Course “Monolithic Chromatographic Systems” (2007). Centre for Bioseparation Technology, Vellore Institute of Technology, Vellore, India.
- International Conference on Biotechnology (INCOB – 2008). Vellore Institute of Technology, Vellore, India.
- Multidimensional NMR: Basic Principle and its Applications (2010). Vellore Institute of Technology, Vellore, India.
- Workshop on Genetic Transformation and Transgenic Plants: Concepts, Applications and Concerns (2010). Vellore Institute of Technology, Vellore, India.

RESEARCH TRAININGS:

- Internship training at G. Kuppuswamy Naidu Memorial Hospital, Coimbatore, India.
- Completed a Certificate course in Medicinal Plants and Propagation conducted by the Department of Biochemistry, Dr. G. R. Damodaran College Of Science, Coimbatore, India.
- Summer training at Madras Diabetes Research Foundation, Gopalapuram, Chennai.
- Masters Dissertation research work titled “Isolation, Purification and Characterization of Collagen (Type I)” at National Institute of Nutrition, Hyderabad, Indian Council Of Medical Research (ICMR), New Delhi.
- Successfully completed a Life Sciences Research Board, Govt. Of India funded project “Investigation of anticancer properties of *Picrorhiza kurroa*, *Acorus calamus* and *Oroxylum indicum*” [Ref. No. DLS/81/48222/LSRB-114/EPB/2006 dt. 21.12.2006].

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