



### **Dr. Prasad Padmakar Kulkarni**

Scientist E

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#### **Research Interest**

Alzheimer's disease, Inorganic Biochemistry, Natural products, Chemical Biology

- The team is working on understanding the role of transition metals especially Cu, Fe, Zn and Pt in neurodegenerative diseases such as Alzheimer's disease (AD).
- The research focus is to understand the physiologically relevant metal ions with A $\beta$ 1-16 peptide to study the oxidation patterns and electrochemical behavior of metallated A $\beta$  peptide. The metal ions are known to bind A $\beta$  peptide modulating the aggregation mechanism and formation of oligomers.
- The team evaluates effect of a range of bioactive molecules on inhibition of A $\beta$  peptide fibrillization in vitro.
- The team is also working on hepcidin measurement as a possible indicator to assess the iron status in adolescent girls from socioeconomic class.

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#### **Education & Scientific Career**

- Postdoctoral Research Scientist, Rowett Research Institute, Aberdeen, UK
- Post-doctoral Research Fellow, The Hospital for Sick Children, Toronto, Canada
- Visiting Fellow, Department of Chemistry, University of Hull, UK

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#### **Awards**

- Recipient of RESTRACOMP post-doctoral fellowship award, 2001 from The Hospital for Sick Children, Toronto, Canada to work on copper related human metabolic diseases.
- Visitorship award from British council under the HE Link programme to work at University of Hull, UK. (May-August 1998; collaborating faculty: Prof. Ekkhard Sinn and Dr. Simon Woodward)
- Qualified CSIR examination JRF and SRF and CSIR-NET examination for lectureship in Chemical Sciences.

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#### **Funding**

- Department of Science and Technology, Govt. of India
- Department of Biotechnology, Govt. of India

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### Publications (reversed order of numbering)

35. DS Ranade, BV Shravage, AA Kumbhar, UB Sonawane, VP Jani, P. P. Kulkarni. Thiosemicarbazone Moiety Assist in Interaction of Planar Aromatic Molecules with Amyloid Beta Peptide and Acetylcholinesterase. *ChemistrySelect* 2, 3911-3916, 2017
34. GR Walke, DS Ranade, SN Ramteke, S Rapole, C Satriano, E Rizzarelli, P. P. Kulkarni. Fluorescent Copper Probe Inhibiting A $\beta$ 1-16-Copper (II)-Catalyzed Intracellular Reactive Oxygen Species Production. *Inorganic Chemistry* 56, 3729-3732, 2017.
33. K. Samanta, D. S. Ranade, A. Upadhyay, P. P. Kulkarni, C. P. Rao. A bi-modal, cationic and water soluble calyx [4] arene conjugate: Design, synthesis, characterization and transfection of RFP encoded plasmid in cancer cells. *ACS Applied Materials & Interfaces*, 9, 5109-5117, 2017.
32. A. C. Shaikh, Ds. S. Ranade, P. R. Rajamohanan, P. P. Kulkarni, and N. T. Patil. Oxidative Intramolecular 1,2-Amino-oxygenation of Alkynes under Au(I)/Au(III)-Catalysis: Discovery of Pyridinium-Oxazole Dyadas Novel Ionic Fluorophore. *Angew. Chem. Intl. Ed.* 56, 757-761, 2017.
31. N. A Vyas, S. N. Ramteke, A. S. Kumbhar, P. P. Kulkarni, V. Jani, U. B. Sonawane, R. R. Joshi, B. Joshi, A. Erxleben, Ruthenium (II) polypyridyl complexes with hydrophobic ancillary ligand as A $\beta$  aggregation inhibitors. *European Journal of Medicinal Chemistry*, 121, 793-802, 2017.
30. N. S. Ghatpande, P. P. Apte, B. N. Joshi, S. S. Naik, D. S. Bodas, V. Sande, P. Uttarwar, P. P. Kulkarni\*. Development of a novel smartphone-based application for accurate and sensitive on-field hemoglobin measurement. *RSC Advances* 6,104067-104072, 2016.
29. G. R. Walke, D. S. Ranade, A. M. Bapat, R. Srikanth, P. P. Kulkarni\*. Mn (III)-Salen Protect Against Different ROS Species Generated by the A $\beta$ 16-Cu Complex. *ChemistrySelect*, 1, 3497-3501, 2016.
28. M. R. Hardikar, M. E. Varma, A. A. Kulkarni, P. P. Kulkarni, B. N. Joshi. Elucidation of hypoglycemic action and toxicity studies of insulin-like protein from Costusigneus. *Phytochemistry*, 124, 99-107, 2016.
27. Y. P. Ginotra, S. N. Ramteke, G.R Walke, S. Rapole, P. P. Kulkarni\*. Histidine availability is decisive in ROS-mediated cytotoxicity of copper complexes of A $\beta$ 1-16 peptide. *Free Radical Research*, 50, 405-413, 2016.
26. L. B. Rane, A. N. Kate, S. N. Ramteke, B. V. Shravage, P. P. Kulkarni, A. A. Kumbhar. Fluorescent zinc (ii) complexes for gene delivery and simultaneous monitoring of protein expression. *Dalton Transactions*, 45, 16984-16996, 2016.
25. B. Shravage, S. Ramteke, P. P. Kulkarni, D. S. Bodas. A concave microwell array fabricated using the ommatidium of the common fruit fly for efficient cell culture. *RSC Advances*, 6, 64266-64270, 2016.
24. N. S. Ghatpande, P. P. Apte, S. S. Naik, B. N. Joshi, M. K. Gokhale, P. P. Kulkarni\*. Association of B12 deficiency and anemia synergistically increases the risk of high TNF- $\alpha$  levels among adolescent girls. *Metalomics*, 8, 734-738, 2016.

- 23.D. S. Ranade, A. M. Bapat, S. N. Ramteke, B. N. Joshi, P. Roussel, A. Tomas, P. Deschamps, P. P. Kulkarni\*. Thiosemicarbazone modification of 3-acetyl coumarin inhibits A $\beta$  peptide aggregation and protect against A $\beta$ -induced cytotoxicity, European Journal of Medicinal Chemistry, 121, 803-809, 2015.
22. A. C. Shaikh, D. S. Ranade, S. Thorat, A. Maity, P. P. Kulkarni, R. G. Gonnade, P. Munshi, N. T. Patil. Highly emissive organic solids with remarkably broad colortunability based on N, C-chelate, four-coordinate organoborons, Chemical Communications, 51, 16115-16118, 2015.
21. S. N. Ramteke, G. R. Walke, B. N. Joshi, S. Rapole, P. P. Kulkarni\*. Effects of oxidation on redox and cytotoxic properties of copper complex of A $\beta$ 1-16 peptide, Free radical research, 48, 1417-1425, 2014.
20. G. R. Walke, S. Rapole, P. P. Kulkarni\*. Cisplatin inhibits the formation of a reactive intermediate during copper-catalyzed oxidation of amyloid  $\beta$  peptide, Inorganic chemistry, 53, 10003-10005, 2014.
19. N. A. Vyas, S. S. Bhat, A. S. Kumbhar, U. B. Sonawane, V. Jani, R. R. Joshi, S. N. Ramteke, P. P. Kulkarni, B. Joshi. Ruthenium (II) polypyridyl complex as inhibitor of acetylcholinesterase and A $\beta$  aggregation. European journal of medicinal chemistry, 75, 375-381, 2014.
18. G. R. Dhage, S. R. Thopate, S. N. Ramteke, P. P. Kulkarni. One-pot synthesis and evaluation of novel 3-aryl-6-ethoxycarbonyl-4-hydroxy-2 H-pyran-2-one as a potent cytotoxic agent. RSC Advances, 4, 56870-56875, 2014.
17. S. N. Ramteke, Y. P. Ginotra, G. R. Walke, B. N. Joshi, A. S. Kumbhar, S. Rapole, P. P. Kulkarni\*. Effects of oxidation on copper-binding properties of A $\beta$ 1-16 peptide: A pulse radiolysis study. Free radical research, 47, 1046-1053, 2013.
16. Y. P. Ginotra, S. N. Ramteke, R. Srikanth, P. P. Kulkarni\*. Mass Spectral Studies Reveal the Structure of A $\beta$ 1-16-Cu2+ Complex Resembling ATCUN Motif. Inorganic chemistry, 51, 7960-7962, 2012.
15. Y. P. Ginotra, P. P. Kulkarni\*. Solution structure of physiological Cu (His) 2: novel considerations into imidazole coordination. Inorganic chemistry, 48, 7000-7002, 2009.
14. S. Narindrasorasak, P. P. Kulkarni, P. Deschamps, Y. She, B. Sarkar. Characterization and copper binding properties of human COMMD1 (MURR1), Biochemistry, 46, 3116-3128, 2007.
13. P. P. Kulkarni, Y. She, S. D. Smith, E. A. Roberts, B. Sarkar. Proteomics of Metal Transport and Metal-Associated Diseases, Chemistry-A European Journal, 12, 2410-2422, 2006.
12. P. Deschamps, P. P. Kulkarni, M. Gautam-Basak, B. Sarkar. The saga of copper (II)-L-histidine, Coordination chemistry reviews, 249, 895-909, 2005.
11. Z. Afrasiabi, E. Sinn, P. P. Kulkarni, V. Ambike, S. Padhye, D. Deobagakar, M. Heron, C. Gabbutt, C. E. Anson, A. K. Powell. Synthesis and characterization of copper (II) complexes of 4-alkyl/aryl-1, 2-naphthoquinones thiosemicarbazones derivatives as potent DNA cleaving agents, Inorganicachimicaacta, 358, 2023-2030, 2005.
10. P. Deschamps, P. P. Kulkarni, B. Sarkar. X-ray structure of physiological copper (II)-bis (L-histidinato) complex, Inorganic chemistry, 43, 3338-3340, 2004.

9. P. Deschamps, P. P. Kulkarni, B. Sarkar. The crystal structure of a novel copper (II) complex with asymmetric ligand derived from l-histidine, *Inorganic chemistry*, 42, 7366-7368, 2003.
8. P. P. Kulkarni, S. Padhye, E. Sinn. Hemiprotonateddafone, a new cationic species. The novel di-dafonium iron (III) complex:[(dafone) 2 H]<sup>+</sup>[FeCl<sub>4</sub>]<sup>-</sup>, *Inorganic chemistry communications*, 6, 1129-1132, 2003.
7. P. P. Kulkarni, S. Padhye, E. Sinn, C. E. Anson, A. K. Powell. Comparative studies on copper (I) complexes: synthesis, X-ray crystallography and electrochemical properties of [Cu I (dafone)<sub>n</sub> X] complexes (dafone= 4, 5-diaza-fluoren-9-one, X= Br, I, SCN), *Inorganicachimicaacta*, 332, 167-175, 2002.
6. P. P. Kulkarni, S. Padhye, E. Sinn. Neutral metal complex in an ionic pocket: synthesis, physicochemical properties and X-ray structure of a copper (II) complex containing neutral as well as cationic dafone ligands and dafonium perchlorate, *Inorganicachimicaacta*, 321, 193-199, 2001.
5. S. Padhye, P. P. Kulkarni, C. E. Anson, A. K. Powell, E. Sinn. Crystal structures of new polymeric (4, 5-diaza-fluoren-9-one) Cu (I) complexes, *POLYMER PREPRINTS-AMERICA*, 43, 380-381, 2001.
4. M. Gupta, R. K. Kale, P. P. Kulkarni, S. B. Padhye. Antioxidant and Prooxidant Effects of Metal Dafonates on the NADPH-Dependent Lipid Peroxidation in the Murine Hepatic Microsomal System, *Metal Based Drugs*, 6, 169-176, 1999.
3. P. P. Kulkarni, S. Padhye, E. Sinn Communication: The first well characterized Fe (phen) Cl<sub>3</sub>complex : structure of aquo mono(1,10-phenanthroline) iron (III) trichloride : [Fe (phen) Cl<sub>3</sub> (H<sub>2</sub>O)], *Polyhedron*, 17, 2623-2626, 1998.
2. A. Kumbhar, P. P. Kulkarni, S. Padhye Cytotoxic properties of metal-quinone complexes: Role of redox cycling in the toxicities of iron (II) and iron (III) complexes of 2-and 5-hydroxy-1, 4-naphthoquinones to isolated rat hepatocytes, *Journal of Chemical Sciences*, 108, 315-315, 1996.
1. A. Kumbhar, S. Damle, P. P. Kulkarni, D. Srinivas, V. Chatur. Synthesis, characterization and nuclease activity of copper (II), nickel (II) and iron (II) complexes of 2-acetylpyridine oxime, *Indian journal of chemistry. Sect. A: Inorganic, physical, theoretical & analytical*, 35, 533-535, 1996.