

## UDAYABANU MALAIRAMAN

Department of Biotechnology, Bioinformatics, Jaypee University of Information Technology,  
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### EDUCATION & SKILLS

#### **Doctor of Philosophy (Neuroscience)**

Dr. B. R. Ambedkar Center for Biomedical Research,  
University of Delhi, Delhi, INDIA

Dissertation title: Investigation of the role of zinc in hypobaric hypoxia induced memory impairment and neuronal damage.

Advisor: Dr. Anju Katyal, Associate Professor

**Skills:** Animal handling (mice/rats/rabbits), behavioural studies involving learning and memory (Morris Water Maze, Passive avoidance task, etc.) Isolation of rodent brains and dissection of cortex & hippocampus, Tissue sectioning (Frozen sections/Cryotome), immunofluorescence, histochemistry, RTPCR, Immunoblot, enzyme assays, etc.

#### **Master of Pharmacy (Pharmaceutical Science)**

Specialization: Medicinal and Pharmaceutical Chemistry

Department of Pharmacy, Shri G.S. Institute of Technology & Sciences, Indore, INDIA

**Skills:** Drug Discovery (computer aided drug design, QSAR)

#### **Bachelor of Pharmacy**

The Tamil Nadu Dr. MGR Medical University, Tamilnadu, INDIA

### RESEARCH EXPERIENCE

**Senior Research Fellow** (Indian Council of Medical Research) – from 2006 to 2009

Worked under the supervision of Dr. Anju Katyal at Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi (India), in the field of neurological disorders associated with dementia.

**Research Scholar** – from 2004 to 2006

Worked under the supervision of Dr. Anju Katyal at Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi (India), in the field of neurological disorders associated with dementia.

**Junior Research Fellow** (All India Council of Technical Education)- from 2000-02

Worked under the supervision of Prof. Piyush Trivedi at Shri G. S. Institute of Technology and Sciences (India), in the field of Computed Aided Drug Design.

#### Research Projects:

1. **Research project funded by DRDO** - entitled "Formulation of an antidepressant /stress reliever drug based on St. John's Wort". (As PI, Completed April 2012)
2. **Research project funded by DBT** "Development of a multi-compartment in vitro model of the human gastrointestinal tract", DBT, Govt of India (As Co-PI, 2014-2017)

3. **Research project funded by ICMR** - A Bioinformatic and experimental approach to investigate the interaction between acetylcholinesterase (AChE) and angiotensin converting-enzyme (ACE) with proteins/BACE-1 associated with Alzheimer's Disease. (As Co-PI, March 2015-2018)
4. **Research project funded by ICMR** – “To investigate the effect of *Urtica dioica* on maternal diabetes induced neuronal dysfunction in the offspring” (As PI, March 2018)

### **TEACHING EXPERIENCE**

1. Assistant Professor, Jaypee University of Information Technology, Waknaghat (India) - from 2010 to till date.
2. Lecturer, Dept. of Biotechnology, Jaypee Institute of Information Technology, INDIA from Nov-2009-2010.
3. Teaching assistant, Dr.B.R.Ambedkar Center for Biomedical Research, University of Delhi, Delhi (India) – from 2005 to 2006.
4. Lecturer, Raj Kumar Goel Institute of Technology, Ghaziabad, INDIA– from 2004 to 2005.
5. Lecturer, Shri R. M. S Institute of Science and Technology, Bhanpura, M.P, INDIA – from 2002 to 2004.

### **PUBLICATIONS**

1. R Tiwari, S Chanda, **U Malairaman**, M Singh, S Agarwal. Anti-inflammatory and Anti-arthritis potential of standardized extract of *Clerodendrum serratum* (L.) Moon (2021) *Frontiers in Pharmacology* 12, 429. **IF: 5.8**
2. A Kumari, A Sharma, R Sharma, **U Malairaman**, RR Singh. Biocompatible and fluorescent water based NIR emitting CdTe quantum dot probes for biomedical applications (2021) *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 248, 119206. **IF: 4.09**
3. S Kalia, VK Bharti, A Giri, **U Malairaman**, A Biswas, B Kumar. Effect of *Salix alba* leave extract on growth performance, antioxidant level and immune status of broiler chickens reared at high altitude cold desert (2021) *Biologia*, 1-13. **IF: 1.35**
4. Kumar A, Mehta V, Raj U, Varadwaj PK, **Udayabanu M**, Yennamalli RM, Singh TR. Computational and In-Vitro Validation of Natural Molecules as Potential Acetylcholinesterase Inhibitors and Neuroprotective Agents. *Curr Alzheimer Res.* 2019;16(2):116-127. **IF: 3.289**

5. Parashar A, Mehta V, **Malairaman U**. Type 2 Diabetes Mellitus Is Associated with Social Recognition Memory Deficit and Altered Dopaminergic Neurotransmission in the Amygdala. *Ann Neurosci*. 2018 May;24(4):212-220. **IF:0.43**
6. Arun Sharma, Ankita Rajata, **Udayabanu Malairaman** and Hemant Sood. Hydroalcoholic extraction of shoot cultures from *Nothapodyte nimmoniana* and its anti-proliferative analysis. *International journal of Pharmacy and Pharmaceutical sciences*. 2018; 10(6): 32-37. **IF: 0.51**
7. Mahajan R, Attri S, Mehta V, **Udayabanu M**, Goel G. Microbe-bio-Chemical Insight: Reviewing Interactions between Dietary Polyphenols and Gut Microbiota. *Mini Rev Med Chem*. 2018;18(15):1253-1264. **IF: 2.645**
8. Kumari A, Sharma A, **Malairaman U**, Singh RR. Proficient surface modification of CdSe quantum dots for highly luminescent and biocompatible probes for bioimaging: A comparative experimental investigation. *Journal of Luminescence*. 2018; 199: 174-182. **IF: 2.732**
9. Patel SS, Ray RS, Sharma A, Mehta V, Katyal A, **Udayabanu M**. Antidepressant and anxiolytic like effects of *Urtica dioica* leaves in streptozotocin induced diabetic mice. *Metab Brain Dis*. 2018 Aug;33(4):1281-1292. **IF:2.638**
10. Mehta V, Singh TR, **Udayabanu M**. Quercetin ameliorates chronic unpredicted stress-induced behavioral dysfunction in male Swiss albino mice by modulating hippocampal insulin signaling pathway. *PhysiolBehav*. 2017 Dec 1;182:10-16 **Impact Factor:2.461**
11. A Sharma, V Mehta, A Parashar, **U Malairaman**. Combinational effect of Paclitaxel and Clotrimazole on human breast cancer: Proof for synergistic interaction. *Synergy* 2017; 5, 13-20.
12. S Tiwari, N Gupta, **U Malairaman**, J Shankar. Anti-aspergillus Properties of Phytochemicals Against Aflatoxin Producing *Aspergillus flavus* and *Aspergillus parasiticus*. *National Academy science letters* 2017; 40 (4), 267-271
13. Kalia S, Bharti VK, Giri A, Vivek P, Kumar B And **Udayabanu M**. Effect of hydro-alcoholic extract of *Rhodiola imbricata* on growth performance, immunomodulation, antioxidant level and blood biochemical parameters in broiler chickens at high altitude cold desert. *Indian Journal of Animal Sciences* 2017; 87 (10): 1200–1206.
14. Parashar A, Mehta V, **Udayabanu M**. Rutin alleviates chronic unpredictable stress-induced behavioral alterations and hippocampal damage in mice. *Neurosci Lett*. 2017 Aug 24;656:65-71. **Impact Factor: 2.03.**

15. Choudhary R, **Malairaman U**, Katyal A. Inhibition of 12/15 LOX ameliorates cognitive and cholinergic dysfunction in mouse model of hypobaric hypoxia via. attenuation of oxidative/nitrosative stress. *Neuroscience*. 2017 Sep 17;359:308-324. **Impact Factor: 3.357**.
16. Patel SS, **Udayabanu M**. Effect of natural products on diabetes associated neurological disorders. *Rev Neurosci*. 2017 Apr 1;28(3):271-293. **Impact Factor:2.546**
17. Parashar A, **Udayabanu M**. Gut microbiota: Implications in Parkinson's disease. *Parkinsonism RelatDisord*. 2017 May; 38:1-7. **Impact Factor: 4.484 (Editor's Choice)**
18. Patel SS, Tomar S, Sharma D, Mahindroo N, **Udayabanu M**. Targeting sonic hedgehog signaling in neurological disorders. *NeurosciBiobehav Rev*. 2017;74(Pt A):76-97. **Impact Factor: 8.58**
19. Raj Kumar Tiwari, **Udayabanu M**, Silpi Chanda, "Gas Chromatography- Mass Spectrometry analysis of essential oil composition of *Clerodendrum Serratum L.*: A traditional plant of India", *Asian Journal of Pharmaceutical and Clinical Research*, vol. 10, pp. 226-229, Jul. 2017.
20. Raj Kumar Tiwari, **Udayabanu M**, Silpi Chanda, "Evaluation of In Vitro Antioxidant Potential of Aqueous Root Extract of *Clerodendrum Serratum L.*", *AJPCR*, vol. 10, pp. 402-404, Apr. 2017.
21. 3. Raj Kumar Tiwari, **Udayabanu M**, Silpi Chanda, "Quantitative Analysis of Secondary Metabolites in Aqueous Extract of *Clerodendrum Serratum*,"*International Research Journal of Pharmacy*,vol. 7, pp.61-65, Dec. 2016.
22. Mehta V, Parashar A, Sharma A, Singh TR, **Udayabanu M**. Quercetin ameliorates chronic unpredicted stress-mediated memory dysfunction in male Swiss albino mice by attenuating insulin resistance and elevating hippocampal GLUT4 levels independent of insulin receptor expression. *HormBehav*. 2016;89:13-22. **Impact Factor: 3.34(Frank A. Beach Award Paper)**
23. Patel SS, Mahindroo N, **Udayabanu M**. *Urticadioica* leaves modulates hippocampal smoothed-glioma associated oncogene-1 pathway and cognitive dysfunction in chronically stressed mice. *Biomed Pharmacother*. 2016a;83:676-686. **Impact Factor:2.326**
24. Kumar K, Sharma S, Vashishtha V, Bhardwaj P, Kumar A, Barhwal K, Hota SK, **Malairaman U**, Singh B. *Terminalia arjuna* bark extract improves diuresis and attenuates acute hypobaric hypoxia induced cerebral vascular leakage. *J Ethnopharmacol*. 2016 Mar 2;180:43-53
25. Mehta V, Parashar A, **Udayabanu M**. Quercetin prevents chronic unpredictable stress inducedbehavioral dysfunction in mice by alleviating hippocampal oxidative and inflammatory stress. *Physiology &Behavior*. 2017; 171:69-78. **Impact Factor:2.461**

26. Patel SS, Gupta S, **Udayabanu M.** Urticadioica modulates hippocampal insulin signaling and recognition memory deficit in streptozotocin induced diabetic mice. *Metab Brain Dis.* 2016b;31(3):601-11. **Impact Factor: 2.6**
27. Mehta V, Parashar A, Sharma A, Singh TR, **Udayabanu M.** Quercetin ameliorates chronic unpredicted stress mediated memory dysfunction in male Swiss albino mice by attenuating insulin resistance and elevating hippocampal GLUT4 levels independent of insulin receptor expression. *Hormones and Behavior.* 2016; 89:13-22. **Impact Factor: 3.34**
28. Parashar A, **Udayabanu M.** Gut microbiota regulates key modulators of social behavior. *European Neuropsychopharmacology. Eur Neuropsychopharmacol.* 2016;26(1):78-91. **Impact Factor: 4.369.**
29. Patel SS, Parashar A, **Udayabanu M.** Urticadioica leaves modulates muscarinic cholinergic system in the hippocampus of streptozotocin-induced diabetic mice. *Metab Brain Dis.* 2015;30(3):803-11. **Impact Factor: 2.638.**
30. **Udayabanu M,** Kumaran D, Katyal A. Effect of Ca<sup>2+</sup>EDTA on zinc mediated inflammation and neuronal apoptosis in hippocampus of an in vivo mouse model of hypobaric hypoxia. *Plosone. PLoS One.* 2014;9(10):e110253. **Impact Factor: 3.234.**
31. Patel SS, **Udayabanu M.** Urticadioica extract attenuates depressive like behavior and associative memory dysfunction in dexamethasone induced diabetic mice. *Metab Brain Dis.* 2014;29(1):121-30. **Impact Factor: 2.638.**
32. SS Patel, **Udayabanu M.** Effect of Urticadioica on memory dysfunction and hypoalgesia in an experimental model of diabetic neuropathy. *Neurosci Lett.* 2013;552C:114-119. **Impact Factor: 2.03.**
33. **Udayabanu M,** Kumaran D, Katyal A. Free chelatable zinc modulates the cholinergic function during hypobaric hypoxia-induced neuronal damage: an in vivo study. *Neuroscience.* 2012;202:434-45. **Impact Factor: 3.357.**
34. **Udayabanu M,** Kumaran D, Nair RU, Srinivas P, Bhagat N, Aneja R, Katyal A. Nitric oxide associated with iNOS expression inhibits acetylcholinesterase activity and induces memory impairment during acute hypobaric hypoxia. *Brain Res.* 2008; 1230:138-49. **Impact Factor: 2.843.**
35. Kumaran D, **Udayabanu M,** Nair RU, Katyal A. Benzamide protects delayed neuronal death and behavioural impairment in a mouse model of global cerebral ischemia. *Behav. Brain Res.* 2008; 192(2):178-84. **Impact Factor: 3.028.**

36. Kumaran D, **Udayabanu M**, Kumar M, Aneja R, Katyal A. Involvement of angiotensin converting enzyme in cerebral hypoperfusion induced anterograde memory impairment and cholinergic dysfunction in rats. *Neuroscience*. 2008; 155(3):626-39. **Impact Factor: 3.357**.

### Conference Presentations and Proceedings

#### Proceedings:

1. Katyal, A., Kumaran, D., Udayabanu, M., "Behavioural dysfunction and delayed neuronal death associated with cholinergic hypofunction during global cerebral ischemia and the effect of rivastigmine, galantamine and choline," *Int. J. Dev. Neurosci.*, 2012. (<http://dx.doi.org/10.1016/j.ijdevneu.2012.03.336>) [Indexed in SCOPUS, Impact factor: 2.418]

#### Oral:

1. Memory dysfunction and neuronal death after hypobaric hypoxia: involvement of free chelatable zinc." Udayabanu, M., Kumaran, D., Katyal, A., National Conference on Medical Biotechnology- Vision 2020 held at M.D.University Rohtak from 16-18 April, 2010.
2. "Quantitative structure activity relationship analysis on styrylquinoline derivatives as HIV-1 integrase inhibitors". Udayabanu, M.; Trivedi, P. 53rd Indian Pharmaceutical Congress (IPC), New Delhi, 21-23 Dec. 2001.

#### Poster:

1. Vineet M, Ashwani K, Tiratharaj S, Udayabanu M, Screening of herbal molecules against type 2 diabetes mediated memory dysfunction at XXXIII Annual conference of Indian Academy of Neurosciences, Punjab University, Chandigarh, Oct'31 –Nov'2, 2015
2. S.S. Patel and M. Udayabanu. Urticadioica attenuates the cognitive decline in streptozotocin-induced diabetic mice through modulation of insulin signaling pathway. International Conference on Chemical Biology: Disease Mechanisms and Therapeutics (ICCB-2014) at Indian Institute of Chemical Technology, Hyderabad. Feb-2014.
3. S.S. Patel and M. Udayabanu. EFFECT OF PIPERINE ON A MICE MODEL OF GLOBAL CEREBRAL ISCHEMIA INDUCED SPATIAL MEMORY DYSFUNCTION. 27 th Annual Meeting of "Society for Neurochemistry, India" And International Conference on "Recent Advances in Molecular Mechanisms of Neurological Disorders" 21 -23 February, 2013 at AIIMS, New Delhi.
4. Patel SS, Mahindroo N, Udayabanu M, Effect of Hypericum extract on chronic stress induced alteration in bax expression in hippocampus region of mice, ICMR sponsored seminar on Research Trends in Future Drug Development: Exploration of Medicinal and Aromatic Flora, June 20-21(2012), Shoolini University, Solan.
5. "BCL-2, BAX and TNF- $\alpha$  expression in transient global cerebral ischemic BALB/C mice at different time intervals". Kumaran D.; Unnikrishnan N.; Udayabanu M.; Ramesh C.; and Anju K. CBISNF-2004, International conference, New Delhi, India.

**Project students guided/ongoing:** PhD – 9, M.Tech/M.Pharm – 13. - One CSIR-SRF fellow - One DST inspire fellow - One ICMR project fellow –Two DRDO Fellow

### **ACADEMIC AWARDS AND HONORS**

- Frank A. Beach Award Paper - HormBehav. 2016;89:13-22.
- Recipient of senior research fellowship (ICMR, INDIA) from 2006 to 2009
- Recipient of junior research scholarship (AICTE, INDIA), from 2000 to 2002
- Member of Academic council for Post Graduate in S.G.S.I.T.S., Indore, INDIA
- Ranked # 12 in national level Graduate Aptitude Test in Engineering exam with 99.61 percentile conducted by Indian Institute of Technology in 2000
- Ranked as #1 in educational achievement at undergraduate level

### **Reviewer in International reputed Journals:**

- Plosone
- Neuroscience Letters
- Neurochemistry International
- Gene