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Life & Health Sciences
Pharmacy
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Research Interests

I am interested in the behavioural aspects and molecular mechanisms of pain. My research work primarily involves the behavioural and functional assessment, and modulation of TRP ion channels in sensory neurons under physiological and disease conditions, and how they contribute to hyperalgesia.

Prior to this assignment, my work was directed towards investigating the physiological and functional role of CART peptide in neurological disorders employing rats and mice as experimental models. I demonstrated that endogenous CART potentiates spatial learning and memory behaviour and modulates the effects of cholinergic agents in the management of Alzheimer's disease like conditions in rats. I showed that CART in accumbens shell in brain serve as an essential component of the opiod-mesolimbic dopaminergic reward system. Further I studied that CART also process predator induced fear in the neuronal circuitry that operates across the hypothalamo-amygdalar circuit. Later I demonstrated the role of CART as neuroprotective agent in the prevention of Parkinson's disease and Huntington's disease since it increased the dopamine content in brain. CART also modulates the neuropathic pain and closely interacts with the glucocorticoids in nerve damage ailments like spinal cord injury. Thus, I concluded that upregulation of endogenous CART system might serve as fruitful strategy in the treatment of a range of pathophysiological conditions and neurodegenerative diseases. This research work has led to several high impact publications in journals like Addiction Biology, Neuropharmacology, Behavioural Brain Research, Brain Research, Peptides, Life Sciences, Neuropeptides, etc. Before joining IISER Pune, I worked with Drug Discovery Biology team at Sun Pharma Advanced Research Company Ltd., India (SPARC), a leading pharmaceutical company. With SPARC, I served as Lead Scientist for the assessment of molecules in Parkinson's, Alzheimer's and Huntington's diseases. We proposed one SPARC molecule as a drug candidate for Parkinson's disease therapy, and could publish one international patent in WIPO entitled "Treatment for Parkinson's disease".

Techniques expertise: Behavioural Pharmacology, Immunohistochemistry, Transcardial perfusions, Neuroanatomy and Brain dissection, Molecular Biology

Qualifications

PhD
19 Sep 2009 → 26 Mar 2013
Award Date: 26 Mar 2013

Employment

Life & Health Sciences
Birmingham, United Kingdom
15 Apr 2019 → present

Postdoctoral Research Associate

Pharmacy
Life & Health Sciences
15 Apr 2019 → present

Research outputs

TREATMENT FOR PARKINSON'S DISEASE

DAMLE, NITIN. KRISHNAJI., MANDHANE, SANJAY. NANDLALJI., Upadhya, M., MEHETRE, SAMEER. VISHWANATH., CHIDREWAR, GAJANAN. UTTAMRAO., SENGUPTA, PRABAL. & CHITTURI, TRINADHA. RAO., 10 Apr 2019, Patent No. EP3463351, Priority No. IN201621019087 20160602 ; IN201621019185 20160602 ; WO2017IN50224 20170602

Neuroprotective effect of agmatine in mouse spinal cord injury model: Modulation by imidazoline receptors

Dixit, M., Upadhya, M., Taksande, B., Raut, P., Umekar, M. & Kotagale, N., 1 Jul 2018, In : Journal of Natural Science, Biology and Medicine. 9, 2, p. 115-120 6 p.

TREATMENT FOR PARKINSON'S DISEASE

DAMLE, NITIN. KRISHNAJI., MANDHANE, SANJAY. NANDLALJI., Upadhya, M., MEHETRE, SAMEER. VISHWANATH., CHIDREWAR, GAJANAN. UTTAMRAO., SENGUPTA, PRABAL. & CHITTURI, TRINADHA. RAO., 7 Dec 2017, IPC No. A61K 31/44, A61K 31/47, A61P 25/16, Patent No. WO2017208267, 2 Jun 2017, Priority date 2 Jun 2016, Priority No. 201621019087; 201621019185

Neuropeptide Y system in accumbens shell mediates ethanol self-administration in posterior ventral tegmental area: AcbSh NPY in ethanol reward

Borkar, C. D., Upadhya, M., Shelkar, G. P., Subhedar, N. K. & Kokare, D. M., Jul 2016, In : Addiction biology. 21, 4, p. 766-775

CART modulates the effects of levodopa in rat model of Parkinson's disease

Upadhya, M., Shelkar, G. P., Subhedar, N. K. & Kokare, D. M., 15 Mar 2016, In : Behavioural Brain Research. 301, p. 262-272

Involvement of hypothalamic neuropeptide Y in pentazocine induced suppression of food intake in rats

Kotagale, N. R., Upadhya, M., Hadole, P. N., Kokare, D. M. & Taksande, B. G., 1 Jun 2014, In : Neuropeptides. 48, 3, p. 133-141

CART in the brain of vertebrates: Circuits, functions and evolution

Subhedar, N. K., Nakhate, K. T., Upadhya, M. A. & Kokare, D. M., 1 Apr 2014, In : Peptides. 54, p. 108-130

A simple and economical method of electrode fabrication for brain self-stimulation in rats

Desai, S. J., Bharne, A. P., Upadhya, M. A., Somalwar, A. R., Subhedar, N. K. & Kokare, D. M., 1 Mar 2014, In : Journal of Pharmacological and Toxicological Methods. 69, 2, p. 141-149

NPY mediates reward activity of morphine, via NPY Y1 receptors, in the nucleus accumbens shell

Desai, S. J., Upadhya, M. A., Subhedar, N. K. & Kokare, D. M., 15 Jun 2013, In : Behavioural Brain Research. 247, p. 79-91

Cocaine- and amphetamine-regulated transcript peptide (CART) in the central nucleus of amygdala potentiates behavioral and hormonal responses of the rat exposed to its predator

Upadhya, M. A., Kokare, D. M. & Subhedar, N. K., 15 Apr 2013, In : Behavioural Brain Research. 243, p. 129-137

Neuroprotective effect of cocaine- and amphetamine-regulated transcript peptide in spinal cord injury in mice

Bharme, A. P., Upadhya, M. A., Shelkar, G. P., Singru, P. S., Subhedar, N. K. & Kokare, D. M., 1 Apr 2013, In : Neuropharmacology. 67, p. 126-135

CART peptide in the nucleus accumbens shell acts downstream to dopamine and mediates the reward and reinforcement actions of morphine

Upadhya, M. A., Nakhate, K. T., Kokare, D. M., Singh, U., Singru, P. S. & Subhedar, N. K., 1 Mar 2012, In : Neuropharmacology. 62, 4, p. 1823-1833

Nicotine evoked improvement in learning and memory is mediated through NPY Y1 receptors in rat model of Alzheimer's disease

Rangani, R. J., Upadhyia, M. A., Nakhate, K. T., Kokare, D. M. & Subhedar, N. K., 1 Feb 2012, In : Peptides. 33, 2, p. 317-328

Cocaine- and amphetamine-regulated transcript peptide increases spatial learning and memory in rats

Upadhyia, M. A., Nakhate, K. T., Kokare, D. M., Singru, P. S. & Subhedar, N. K., 14 Feb 2011, In : Life Sciences. 88, 7-8, p. 322-334

Effect of alpha-melanocyte stimulating hormone on locomotor recovery following spinal cord injury in mice: Role of serotonergic system

Bharne, A. P., Upadhyia, M. A., Kokare, D. M. & Subhedar, N. K., 1 Feb 2011, In : Neuropeptides. 45, 1, p. 25-31

Evidence for the participation of cocaine- and amphetamine-regulated transcript peptide (CART) in the fluoxetine-induced anti-hyperalgesia in neuropathic rats

Upadhyia, M. A., Dandekar, M. P., Kokare, D. M., Singru, P. S. & Subhedar, N. K., 1 Feb 2011, In : Peptides. 32, 2, p. 317-326

Neuropeptide Y Y1 receptors in the central nucleus of amygdala mediate the anxiolytic-like effect of allopregnanolone in mice: Behavioral and immunocytochemical evidences

Deo, G. S., Dandekar, M. P., Upadhyia, M. A., Kokare, D. M. & Subhedar, N. K., 8 Mar 2010, In : Brain Research. 1318, p. 77-86

Involvement of neuropeptide Y in the acute, chronic and withdrawal responses of morphine in nociception in neuropathic rats: Behavioral and neuroanatomical correlates

Upadhyia, M. A., Dandekar, M. P., Kokare, D. M., Singru, P. S. & Subhedar, N. K., 1 Aug 2009, In : Neuropeptides. 43, 4, p. 303-314

Neuropeptide Y modulates the antidepressant activity of imipramine in olfactory bulbectomized rats: Involvement of NPY Y1 receptors

Goyal, S. N., Upadhyia, M. A., Kokare, D. M., Bhisikar, S. M. & Subhedar, N. K., 17 Apr 2009, In : Brain Research. 1266, p. 45-53

Central administration of selective melanocortin 4 receptor antagonist HS014 prevents morphine tolerance and withdrawal hyperalgesia.

Upadhyia, M., 21 Nov 2007, In : Brain Research. 1181, p. 10-20

Activities

Speaker and Resource Person at the Pre-conference Workshop of 48th Annual conference of Indian Pharmacological Society (IPSCON-2015) and International conference on Cutting-Edge Pharmacology: Contemporary Issues and Future Challenges, on "Surgical and Behavioral Techniques in Neuropharmacology"

Manoj Upadhyia (Speaker)
17 Dec 2015

Resource Person and Speaker

Manoj Upadhyia (Speaker)
5 Jan 2013 → 7 Jan 2013

Resource Person and Speaker

Manoj Upadhyia (Speaker)
27 Feb 2010 → 28 Feb 2010

Teaching Assistant

Manoj Upadhya (Speaker)
27 Jan 2008 → 13 Feb 2008

Prizes**All India Rank 371 out of 11698 in GATE-2005**

Manoj Upadhya (Recipient), 15 Mar 2005

Best Paper Award in Pharmacology and Toxicology

Manoj Upadhya (Recipient), 3 Dec 2006

Best Poster Award

Manoj Upadhya (Recipient), 14 Dec 2008

Best Poster Award

Manoj Upadhya (Recipient), 18 Dec 2013

Best Publication in Peer-Reviewed Journal Category

Manoj Upadhya (Recipient), 23 Oct 2016

Executive Master of Business Administration (EMBA)

Manoj Upadhya (Recipient), 10 Aug 2015

Fellowship by University Grants Commission, India

Manoj Upadhya (Recipient), 17 Jul 2005

Gayle A. Olson & Richard D. Olson prize

Manoj Upadhya (Recipient), 1 Feb 2012

JRF and SRF by Department of Science and Technology, India

Manoj Upadhya (Recipient), 15 Mar 2008

Prof. Ch. R. K. Murthy Memorial Prize

Manoj Upadhya (Recipient), 11 Jan 2012

Professor Govinda Achari Prize

Manoj Upadhya (Recipient), 22 Dec 2006

Prof. Govinda Achari Prize

Manoj Upadhya (Recipient), 20 Dec 2008

Prof. Govinda Achari Prize

Manoj Upadhya (Recipient), 16 Dec 2010

Prof. O. D. Gulati Prize

Manoj Upadhya (Recipient), 21 Dec 2011