

## *Curriculum Vitae*

### **Dr. Rakesh Kumar Singh**

**Associate Professor & Head, Department of Pharmacology and Toxicology.**

National Institute of Pharmaceutical Education and Research (NIPER) – Raebareli  
Chemical & Fertilizers, Department of Pharmaceuticals, Govt of India).

Transit campus: Bijnor-Sisendi Road, Sarojini Nagar, Near CRPF Camp

LUCKNOW-226 002, U.P. INDIA. Mobile: +91-981092855

E-mail: [rakesh.singh@niperraebareli.edu.in](mailto:rakesh.singh@niperraebareli.edu.in)



### **1. Highlights**

Dr Rakesh K Singh has Joined NIPER-Raebareli as Associate Professor in the Department of Pharmacology & Toxicology in February 2020. He is also serving as the Head of the Department since March 2021. His broad research area includes translational research on the molecular pathways involved in inflammation in neurodegenerative disorders, airway disorders, and chronic autoimmune diseases.

Dr. Singh earned his PhD in Pharmacology from Jamia Hamdard, New Delhi, and M.S. (Pharm) in Pharmacology and Toxicology from NIPER, Mohali, India. He has over 11 years of rich industrial research experience in New Drug Discovery in well-known multi-national companies (Ranbaxy Research Laboratories and Daiichi Sankyo India Pharma Pvt. Ltd, based in Gurgaon) in India. During his tenure as Industrial scientist in New Drug Discovery, he worked on exploration, selection, and validation of novel therapeutic targets in the broad area of chronic airway disorders (asthma, COPD) and chronic autoimmune inflammatory diseases (rheumatoid arthritis, and psoriasis). He has actively been involved as a team player in a scientific group and have the experience of handling scientific projects as team lead, overseeing project progress and to collaborate with cross functional teams. In addition, he had been instrumental in planning, budgeting, and implementing new scientific programs in collaboration with other departments.

### **2. Professional and Academic Background**

#### **a. Professional Experience**

- ❖ **2017 - 2019:** Associate Professor, Pharmacology, Amity University, Gurgaon;  
Assistant professor, Pharmacology, Apeejay Stya University,  
Gurgaon.

- ❖ **2010 - 2017:** Senior Research Scientist, Pharmacology, Daiichi Sankyo India Pharma Pvt. Ltd., Gurgaon, Haryana.
- ❖ **2006 - 2010:** Research Scientist, Pharmacology, Ranbaxy Research Laboratories, Gurgaon.

#### b. Academic Qualifications

- ❖ PhD Pharmacology, Faculty of Pharmacy, Jamia Hamdard, New Delhi.

*PhD Topic:* Role of MAPK pathway in chronic inflammatory diseases.

*Supervisors:* Dr. Abul Kalam Najmi (Associate Professor, Pharmacology, Jamia Hamdard)

Dr. Sunanda Ghosh Dastidar (Senior Director, Daiichi Sankyo, India).

- ❖ **2004-2006:** M. S. (Pharm), Pharmacology & Toxicology, National Institute of Pharmaceutical Education and Research (NIPER) Mohali.

*Project Title:* Effect of selective neuronal NOS inhibitor on inhibitory effect of L- type calcium channel blockers on tolerance to morphine induced analgesia in mice.

*Supervisor:* Prof. P. Rama Rao (Professor & Head, Pharmacology, NIPER, Mohali).

- ❖ **1999-2003:** Bachelor in Pharmacy, Dibrugarh University, Assam.

#### 3. Professional skills and expertise

- A. Quality expertise in evaluation, analysis and validation of a range of preclinical data including cell-free and cell-based mechanistic and functional regulation of diverse pharmacological pathways in various therapeutic areas.
- B. Extensive experience in basic and advanced cell culture techniques and handling process in cell-based *in vitro* assays. Adroit in culture process and handling of diverse range of cells, processing of human blood derived cells for study of immunological signaling e. g. TLRs.
- C. Biochemical, immunological and functional evaluation of cell-based signaling mechanism *in vitro* which can be useful for a variety disease indication/therapeutic area.
  - 1. Intracellular calcium signaling mechanisms for a wide range of GPCRs.
  - 2. Analysis of second messengers in cellular signaling in cells and tissue-based systems.

3. ELISA-based analysis of pro-inflammatory cytokines in cell-based and ex-vivo inflammation models.
- D. Radioligand binding assay: using over-expressed mammalian cells/tissue homogenates for various studies:
1. Receptor quantification ( $K_d$  and  $B_{max}$ ), determination of affinity constant and potency ( $K_i$  and  $IC_{50}$ ) of NCEs for different receptors/tissues using specific radioligand.
  2. Receptor-ligand dissociation assay, to determine  $t_{1/2}$  and the extent of binding of drugs to receptors.
- E. Cell-free kinase/enzyme-based assays:
1. Competent enough to establish the enzyme studies including kinetics of binding ( $K_m$ ,  $V_{max}$ ,  $t_{1/2}$  and nature of binding) of small molecules to enzymes.
  2. Adroit in efficient and rapid screening of NCEs for enzyme inhibition.

#### 4. **Publication details**

1. Manik M, Singh RK. Role of toll-like receptors in modulation of cytokine storm signaling in SARS-CoV-2-induced COVID-19. *J Med Virol* 2021; 2021. <https://doi.org/10.1002/jmv.27405>. Impact factor 2.37.
2. Dey M, Singh RK. Possible Therapeutic Potential of Cysteinyl leukotriene receptor antagonist, Montelukast in treatment of SARS-CoV-2 induced COVID-19. *Pharmacology* 2021; 106:469–476. Impact factor 2.567.
3. AK Datusalia, G Singh, N Yadav, S Gaun, M Manik, RK Singh. Targeted delivery of montelukast for treatment of Alzheimer's disease *CNS Neurol Dis Drug Targets*, <https://doi.org/10.2174/1871527320666210902163756>. Impact factor 4.388.
4. Urati A, Kumar A, Singh RK. The clinical correlation of proinflammatory and anti-inflammatory biomarkers with Alzheimer disease: a meta-analysis. *Neurol. Sci.* 2021; Impact factor: 3.307.
5. Srivastava S, Rajopadhye R, Dey M, Singh RK. Inhibition of MK2 as a potential therapeutic target to control neuroinflammation in Alzheimer's disease. *Expert Opin. Ther. Targets.* 2021; 25(4):243-247;. Impact factor: 6.902.
6. Goyal D, Ali SA, Singh RK. Emerging role of gut microbiota in modulation of neuroinflammation and neurodegeneration with emphasis on Alzheimer's

- disease. *Prog Neuropsychopharmacol Biol Psychiatry*. 2020; 106:110112. Impact factor: 5.067.
7. Tandon R, Soni A, Singh RK, Sodhi R, Seth MK, Sinha S, Sahdev S, Dhage G, Das B, Dastidar SG, Shriumalla RK, Yonesu K, Marumoto S, Nagayama T. Identification of novel Urotensin-II receptor antagonists with potent inhibition of U-II induced pressor response in mice. *Eur J Pharmacol*. 2020; 886:173391. Impact factor: 4.432.
  8. Singh RK. Antagonism of cysteinyl leukotrienes and their receptors as a neuroinflammatory target in Alzheimer's disease. *Neurol Sci*. 2020; 41(8):2081-2093. Impact factor: 3.307.
  9. Singh RK. Recent Trends in the Management of Alzheimer's disease: Current Therapeutic Options and Drug Repurposing Approaches. *Curr Neuropharmacol*. 2020; 18(9):868-882. Impact factor: 7.363.
  10. Rehman SO, Singh RK, Hussain S, Akhtar M, Najmi AK. A novel therapeutic potential of cysteinyl leukotrienes and their receptors modulation in the neurological complications associated with Alzheimers disease. *Eur J Pharmacol*. 2019; 842:208-220, Impact factor: 4.432.
  11. Singh RK, Najmi AK. Novel Therapeutic Potential of Mitogen-Activated Protein Kinase Activated Protein Kinase 2 (MK2) in Chronic Airway Inflammatory Disorders. *Curr Drug Targets*. 2018 (doi: 10.2174/1389450119666180816121323). Impact factor: 3.465.
  12. Singh RK, Diwan M, Dastidar SG, Najmi AK. Differential effects of p38 and MK2 kinase inhibitors on the inflammatory and toxicity biomarkers in vitro. *Hum Exp Toxicol*. 2018;37(5):521-531. Impact factor: 2.903.
  13. Singh RK, Najmi AK, Dastidar SG. Biological Functions and Role of Mitogen-Activated Protein Kinase Activated Protein Kinase 2 (MK2) in Inflammatory Diseases. *Pharm Rep*. 2017; 69:746-756, Impact factor: 3.024.
  14. Singh RK, Tandon R, Dastidar SG, Ray A. A review on leukotrienes and their receptors with reference to asthma. *J Asthma*. 2013; 50(9):922-931, Impact factor: 1.746.
  15. Gupta S, Malhotra S, Sinha S, Singh SK, Singh RK, Krishna S, Chhabra P, Chaira T, Kannayiram J, Sharma P, Aeron S, Kaur J, Kumar N, Sattigeri J, Shirumalla RK, Paliwal J, Dastidar SG, Cliffe IA, Ray A, Bhatnagar P. Pharmacodynamic and

pharmacokinetic profile of RBx 343E48F0: A novel, long-acting muscarinic receptor antagonist. *Eur J Pharmacol.* 2011; 658(2-3):219-228, Impact factor: 4.432.

16. Singh RK, Gupta S, Dastidar S, Ray A. Cysteinyl Leukotrienes and Their Receptors: Molecular and Functional Characteristics. *Pharmacol.* 2010; 85:336-349, Impact factor: 2.567.
17. Nanda K, Chatterjee M, Gupta S, Singh RK, Tiwari A, Gupta D, Ray A. Functional screening of adrenergic receptors by measuring intracellular calcium using flexstation scanning fluorimeter. *Biotechnol J.* 2009; 4:417-422, Impact factor: 4.677.
18. Gupta S, Singh RK, Nanda K, Chatterjee M, Tiwari A, Sundaram S, Gupta D, Chugh A, Dastidar S, Ray A. Ratiometric Ca<sup>+2</sup> measurement in human recombinant muscarinic receptor subtypes using flexstation scanning. *J Recept Sig Transd.* 2009; 29(2):100-106, Impact factor: 2.2.
19. Gupta S, Singh RK, Dastidar S, Ray A. Cysteine cathepsin S as an immunomodulatory target: present and future trends. *Expert Opin Ther Targets.* 2008; 12(3):291-299, Impact factor: 6.902.
20. RK Singh, S Gupta, P Tiwari, S Saini, R Malik, R Kant, SG Dastidar, A Ray. A fluorescent based enzyme assay for recombinant human lipoxygenase enzyme isoforms. *Pharmacologia* 3 (9), 387-396.
21. RK Singh, E Dhanaraj, P Ramarao. Effect of neuronal NOS selective inhibitor, 7-nitroindazole on inhibitory effect of calcium channel blockers on development of tolerance to morphine-induced analgesia. *Pharmacologia* 4 (1), 53-59.