Department of Biochemistry
All India Institute of Medical Sciences
Ansari Nagar, New Delhi - 110029 (INDIA)

Dr. Archana Singh
MBBS, MD
Additional Professor
Department of Biochemistry
AIIMS-110029

3022, 3rd Floor, Teaching Block,
Department of Biochemistry
Phone (M): 919868450254
(O): 01126593467
E-mail :
archanasinghaiims@gmail.com
archanasingh@aiims.edu

Selection Committee Members
Sun Pharma Science Scholar Award – 2020.

Sudhasini Panda has joined my laboratory as PhD student in August 2016 and is working under my guidance on role of hyperglycemia on macrophage effector functions in pathophysiology of pulmonary tuberculosis. She has a firm understanding of biochemistry and immunology and relevant work experience of 7 years in the field of immunology. She has an instinctive feel for doing research and for the intricacies and rigors of laboratory work. She is an original thinker, highly creative in her approach and capable of coming up with the appropriate research questions.

As part of her PhD thesis, she assessed the alterations in innate immune response, particularly macrophages in terms of pathogen recognition, phagocytosis and killing in uncontrolled diabetic patients having pulmonary tuberculosis. For the study, she recruited 50 pulmonary tuberculosis patients having uncontrolled diabetes with HbA1c levels >7.5%, 50 pulmonary tuberculosis patients, 50 uncontrolled diabetic patients having HbA1c levels >7.5% and 50 healthy controls. In her study, she showed that there were alterations in some of the important pathogen recognition receptors namely CD11b, CD14, MARCO, CD206 and TLR2 in diabetic milieu. Altogether, the receptors responsible for chemotaxis and bacterial opsonization (CD11b, MARCO and TLR2) were found to be downregulated, however receptor like CD206 was upregulated which helps in bacterial survival. She has also found defective phagocytosis and ROS production in diabetic patients having TB. Taken together, she showed that diabetic patients with TB displayed dysregulation in the innate immune system, specifically macrophages in terms of bacterial recognition, phagocytosis and bacterial killing.

In addition to her commitment to her PhD, she had worked on various independent projects in my lab. One of the project involved role of vitamin D and its associated molecules in pulmonary TB patients and their household contacts. The work was published in 2019 in scientific reports and The Journal of Steroid Biochemistry and Molecular Biology wherein she showed that vitamin D deficiency in pulmonary TB might be responsible for TB susceptibility. Close household contacts of these TB patients had sufficient vitamin D levels and their associated molecules which might be protective against development of active disease in these high-risk group. She has also worked on a project focusing on role of regulatory proteins in iron homeostasis in pathogenesis of pulmonary tuberculosis which was published in 2021 in Indian Journal of clinical biochemistry.

Sincerely

29-10-21

Dr. Archana Singh
Additional Professor
Department of Biochemistry
All India Institute of Medical Sciences,
New Delhi, India – 110029.