

## **DBT-NII study to help in COVID-19 vaccine implementation**

New Delhi, April 01: A recent study from Dr Nimesh Gupta's lab at National Institute of Immunology (DBT-NII) has come out with findings that may be crucial for understanding how Indian population is responding to the COVID-19 virus, and provide a key message for vaccine implementation in India.



The researchers analyzed 42 unexposed healthy donors and 28 persons who had mild COVID-19 for immunological memory specific to SARS-CoV-2. They identified immune cells called CD4+ T cells that were cross reactive to SARS-CoV-2 in around 66% of the unexposed individuals and found detectable immune memory in mild COVID-19 patients several months after recovery.

The finding of the high level of cross-reactive CD4+ T perhaps explains the less severe disease and lower rates of hospitalization in India. The researchers are looking into more details if this is the major factor for the low case fatality rates in Indian population.

The findings relating to the persistence of immune memory in mild cases could, in turn, be of immense interest in terms of the development and implementation of vaccines against COVID-19. The study has revealed that the Indian patients recovering from mild COVID-19 disease had durable immunological memory in the most important arms of protective immunity – T cells and B cells. The researchers believe that such immunological memory should give protection for at least a few years.

The study further found that the memory CD4+ T cells and B cells in COVID patients were predominantly associated with what are called the spike protein of the virus. This is considered good. As the responses are mainly targeted towards the Spike protein, it gives high hopes to the current vaccines. Because if the vaccine can induce the immune response like seen in mild patients, then it will have an effective and long-lasting cellular immunity against SARS-CoV-2”.

The study, among other things, also suggests not to use virus nucleoprotein as the target protein for sero-epidemiological surveys in India since it may give a wrong indication as almost 30% of the tested donors showed cross-reactive antibodies to SARS-CoV-2 nucleoprotein without exposure to virus prior to pandemic.

In addition, the study supported the notion that single-dose immunization with COVID vaccine may be sufficient to establish optimal protective responses in the individuals with prior exposure.

The researchers have published a report on their work in *Frontiers in Immunology*. The team included Ansari A, Arya R, Sachan S, Jha SN, Kalia A, Lall A, Sette A, Grifoni A, Weiskopf D, Coshic P, and Sharma A, besides Dr. Gupta.

**Reference:** Ansari A, Arya R, Sachan S, Jha SN, Kalia A, Lall A, Sette A, Grifoni A, Weiskopf D, Coshic P, Sharma A and **Gupta N**. Immune Memory in Mild COVID-19 Patients and Unexposed Donors Reveals Persistent T Cell Responses After SARS-CoV-2 Infection. *Frontiers in Immunology*. 2021. <https://doi.org/10.3389/fimmu.2021.636768>

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