

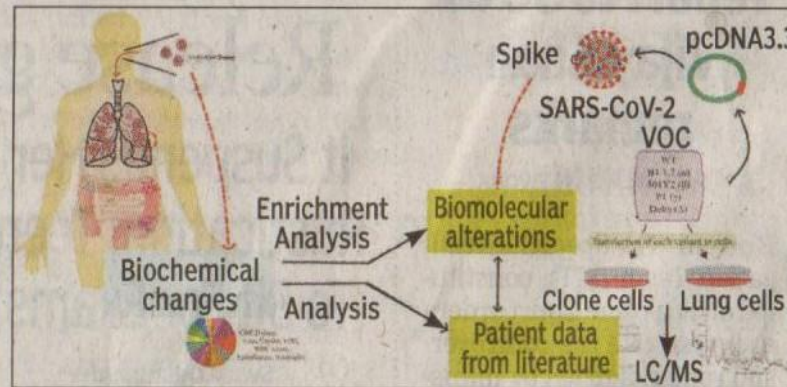
IIT-I study to help develop therapies & precise diagnostics for Covid symptoms

TIMES NEWS NETWORK

Indore: A study by the Indian Institute of Technology, Indore, (IIT-I) in collaboration with top Indian institutions, revealed how different variants of Covid-19 virus affected the human body and led to varying levels of disease severity.

The findings show how different Covid-19 variants influence the body in unique ways, causing major disruptions in metabolic and hormonal pathways. This research was led by Dr Hem Chandra Jha from IIT-I and Dr Nirmal Kumar Mohakud from KIMS Bhubaneswar, with support from the Indian Council of Medical Research (ICMR) and IIT-I.

IIT-I director professor Suhas S Joshi said, "This study is a testament to the strength of interdisciplinary collaboration and cutting-edge research at IIT-Indore. Under-



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standing the long-term impact of Covid-19 at a molecular level is vital for preparing better healthcare responses and designing targeted treatments."

Using clinical data from 3,134 Covid-19 patients from the first and second waves in India, researchers applied machine learning to identify nine critical parameters related to disease severity, such as C-reactive protein (CRP), D-dimer, ferritin, neutrophils,

white blood cell (WBC) count, lymphocytes, urea, creatine, and lactate dehydrogenase (LDH). In addition to analysing patient data, the researchers studied lung and colon cells that were exposed to different spike proteins from these virus variants.

Dr Hem Chandra Jha, an associate professor at IIT-I added, "Our findings reveal how different Covid-19 variants influence the body in unique ways, particularly the Delta

variant, which caused major disruptions in metabolic and hormonal pathways. This research could help develop precise diagnostics and therapies to manage long Covid-19 symptoms more effectively."

According to the findings, the Delta variant showed the most significant disruptions in the body's chemical balance. It affected pathways related to catecholamine and thyroid hormone production, leading to complications, including silent heart failure and thyroid dysfunction. These findings were further supported by a meta-analysis that pointed to disruptions in urea and amino acid metabolism.

The study also involved advanced technologies like multi-omics and Raman spectroscopy, used by Prof Rajesh Kumar's team at IIT-Indore to map these disruptions. Patient data analysis was guided by Professor Sonali Agarwal from IIT Allahabad.