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Hong Kong sheds light on acute kidney injury treatment in COVID-19 patients

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Over 40% of COVID-19 patients in ICU develop acute kidney injury



A recent study conducted by the Faculty of Medicine at The Chinese University of Hong Kong (CU Medicine) has uncovered a SARS-CoV-2 Nucleocapsid (N) protein that can induce acute kidney injury, which is common in critically ill COVID-19 patients.

Using mice models, the CU Medicine research team proved that the viral N protein is pathogenic in acute kidney injury and can induce the injury directly by interacting with a transforming growth factor-beta1 (TGF-?1) signalling molecule, Smad3, which is essential in causing tubular epithelial cell death.

Further experiments found that using Smad3 gene knockout technique or targeting the Smad3 signalling molecule with a pharmacological inhibitor can inhibit acute kidney injury specifically induced by SARS-CoV-2 N protein, suggesting a novel and specific therapy for COVID-19-associated acute kidney injury.

Professor Hui Yao LAN, leader of the research team and Choh-Ming Li Research Professor of Biomedical Sciences from the Department of Medicine and Therapeutics at CU Medicine, said, “Targeting Smad3 may not only inhibit acute kidney injury but also be a novel therapeutic strategy for COVID-19-related organ fibrosis. This gives us the hope of finding a new way to reduce the severity of the illnesses related to COVID-19.”