Vaccines and previous infection could offer some "stronger than basic" protection to Omicron, early study suggests

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One of the earliest, peer-reviewed studies looking into the Omicron variant of COVID-19 suggests that people previously infected with

COVID, and those vaccinated, will have some, "stronger than basic" defence against this new strain of concern.

However, the test tube (or 'in-vitro', scientifically) samples of Omicron examined in this new research do show it "exceeds" all other variants in its potential capability to evade the protection gained from previous infection or vaccination.

Published in *Emerging Microbes & Infection*, the findings also suggest that although a third-dose enhancement strategy can "significantly boost immunity", the protection from Omicron "may be compromised"—but more research is needed to better understand this.

Reporting on this very early study, lead author Youchun Wang, Senior Research Fellow from the National Institutes for Food and Drug Control in China, says their results support recent findings in South Africa which highlight Omicron was "easy to evade immunity".

"We found the large number of mutations of the Omicron variant did cause significant changes of neutralization sensitivity against people who had already had COVID," Wang says.

"However, the average ED50 (protection level) against Omicron is still higher than the baseline, which indicated there is still some protection effect can be observed."

Wang, who is Former Chairman of the Medical Virology and Vice Chairman of the Medical Microbiology and Immunology of the Chinese Medical Association, does adds caution though.

He says that because the antibody protection—in the form of previous infection or vaccination—decreases gradually over a period of six months, Omicron "may be able to escape immunity even better".

Plus, his team's paper predicts that whilst "a third-dose enhancement strategy can significantly boost immunity", the "protection from Omicron may be compromised".

The expert team of 11 scientists looked at 28 serum samples from patients recovering from the original strain of SARS-CoV-2. They tested these against in-vitro Omicron samples, as well as four other strains marked 'of concern' by the World Health Organization (such as Delta), and two variants marked as 'of interest'.

"This study verifies the enhanced immune escape of Omicron variant, which sounds the alarm to the world and has important implications for the public health planning and the development of matching strategies," Wang summarizes.

Now, the team states that more research, carried out not just in-vitro but in real-world studies is urgently needed to better understand Omicron. And, specifically, whether it can "escape from the vaccine elicited immunity to cause more severe disease and death".

"It needs to be re-evaluated whether the antibodies can still be effective against the Omicron variant," the authors state.

"The exact impact to human protection may be influenced by more factors such as the infectivity of Omicron variant relative to other variants to human populations and the viral fitness of Omicron once the humans are infected.

"More population studies including the level of immune protection and symptoms among people infected with Omicron are needed to fully establish the global impact of Omicron to the control of COVID-19 pandemic."

The major caveat of this study is that it is in-vitro in nature and that it used pseudotyped (manufactured) viruses. However, previous studies have used in-virto as an established measure of "good correlation" and the current vaccine literature "has established that the in vitro neutralization assays are good predictors of vaccine protection efficacy and real-world vaccine effectiveness".

Therefore, the authors state, their data "may well predict the potential reduction of vaccine protection against the new Omicron variant".

More information: Li Zhang et al, The significant immune escape of pseudotyped SARS-CoV-2 Variant Omicron, *Emerging Microbes & Infections* (2021). DOI: 10.1080/22221751.2021.2017757

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