Existing vaccines may protect against the Brazilian coronavirus variant

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Scientists at the University of Oxford have released pre-print data measuring the level of antibodies that can neutralize—or stop infection from—variants that are circulating in South Africa, Brazil and elsewhere.

These data suggest that natural- and vaccine -induced antibodies can still neutralize these variants, but at lower levels. Importantly, the P1 "Brazilian' strain may be less resistant to these antibodies than first feared.

Professor Gavin Screaton, lead scientist on the study, said:

"This study extends our understanding the role of changes in the spike protein in escape from the human immune response, measured as neutralizing antibody levels. The results suggest that P1 might be less resistant to vaccine and convalescent immune responses than B1351, and similar to B117."

In the pre-print publication, available on bioRxiv, the authors report on the neutralization of these strains when using blood samples from both people who have natural antibodies generated from a COVID-19 infection and from those with antibodies generated from the ChAdOx1 nCoV-19 Oxford-AstraZeneca and BNT162b2 Pfizer-BioNTech vaccines.

These data show a nearly three-fold reduction in the level of virus neutralization by the antibodies generated by the ChAdOx1 nCoV-19 and BNT162b2 vaccines for the B.1.1.7 (Kent) and P.1 (Brazil) variants when compared to the original "Victoria' strain, and a 9-fold and 7.6-fold reduction respectively against the B.1.351 "South Africa' strain

Professor Andrew Pollard, Chief Investigation on the Oxford University vaccine trial, said: "These further efforts to investigate the relationship between changes in the virus and human immunity provide new insights that help us be prepared to respond to further challenges to our health from the pandemic virus, if we need to do so."

The authors comment that as P.1 and B.1.351 contain very similar changes in the receptor binding domain, it was assumed that the neutralizing antibodies would be similarly affected, meaning that vaccination will likely still provide some protection against P.1. They believe that the drop in vaccine efficacy against mild to moderate disease against B.1.351 is likely a reflection of the mutations occurring outside the receptor binding domain.

They further highlight that given the large reductions in neutralization tires, developing vaccine constructs to B.1.351 should be the greatest priority for vaccine developers globally.

More information: Wanwisa - Dejnirattisai et al. Antibody evasion by the Brazilian P.1 strain of SARS-CoV-2, *bioRxiv* (2021). DOI: 10.1101/2021.03.12.435194

Provided by University of Oxford

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