Vaccine and prior SARS-CoV-2 infection confer long-lasting protection against omicron BA.5

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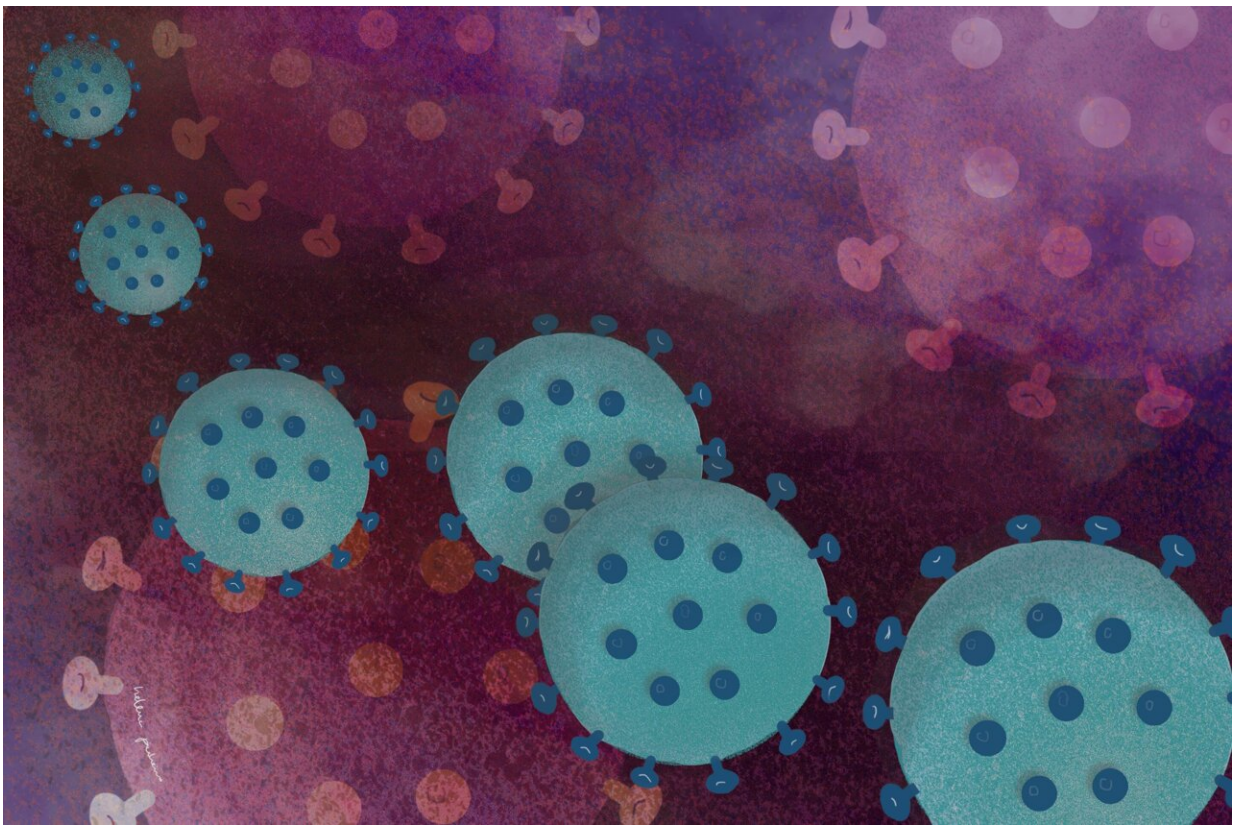

Illustration of SARS-CoV-2. Credit: Helena Pinheiro, iMM

A new study led by Luís Graça, group leader at the Instituto de Medicina Molecular João Lobo Antunes (iMM, Lisbon) and full professor at the

Medical School of the University of Lisbon, and Manuel Carmo Gomes, associate professor with aggregation at the Faculty of Sciences of the University of Lisbon (Ciências ULisboa), both members of the Direção Geral de Saúde (DGS) Technical Committee for Vaccination against COVID-19 (CTVC), and published today in the scientific journal *Lancet Infectious Diseases*, shows that the protection conferred by hybrid immunity against the SARS-CoV-2 subvariant omicron BA.5, obtained by the infection of vaccinated people, lasts for at least eight months after the first infection.

This study follows the results published in September by the same researchers in the *New England Journal of Medicine* where they showed, by studying the widely vaccinated Portuguese population, that infection by the first omicron subvariants of SARS-CoV-2, circulating in January and February 2022, conferred considerable protection against the omicron BA.5 subvariant circulating in Portugal since June and which remains the predominant variant in many countries. However, the stability of the protection conferred by the so-called hybrid immunity, the immunity conferred by the combination of vaccination and infection, was not yet known.

"In September, we had observed that infection by the first omicron subvariants conferred protection for the BA.5 subvariant about four times higher than vaccinated people who were not infected on any occasion, showing the importance of hybrid immunity for protection against new infections. Now, we show that this protection conferred by vaccination together with previous infections is stable and maintained until at least eight months after the first infection," explains Luís Graça, co-leader of the study.

As in the previous study, the researchers used the national COVID-19 case registry until September 2022, which is especially comprehensive due to the legal requirement to register all cases of SARS-CoV-2

infection at the time to gain access to sick leave during mandatory isolation days. "We used the national COVID-19 case registry to obtain the information of all cases of SARS-CoV-2 infections in the population over 12 years old residing in Portugal. These data from the Portuguese population allows us to conclude about hybrid immunity because vaccination had already covered 98% of this population by the end of 2021. The virus variant of each infection was determined considering the date of infection and the dominant variant at that time," explains Manuel Carmo Gomes, co-leader of the study.

About the calculations performed with these data, João Malato, first author of the study, explains: "With these data, we calculated the relative risk of reinfection over time in people vaccinated with previous infections by the first omicron subvariants of SARS-CoV-2, allowing us to conclude on the level of protection against reinfection. We found that protection remains high 8 months after contact with the virus."

"The protection afforded by hybrid immunity is initially about 90%, reducing after 5 months to about 70%, and showing a tendency to stabilize at a value of around 65% after 8 months, compared to the protection in vaccinated persons that were never infected by the virus. These results show that hybrid immunity conferred by infection with previous subvariants of SARS-CoV-2 in vaccinated people is quite stable," adds Luís Graça about the protection conferred by hybrid immunity.

This study shows that infection by previous subvariants of the SARS-CoV-2 virus, which causes COVID-19, has the ability to confer additional protection compared to the protection conferred by vaccination alone, and that this protection is stable.

More information: João Malato et al, Stability of hybrid versus vaccine immunity against BA.5 infection over 8 months, *The Lancet*

Infectious Diseases (2023). DOI: 10.1016/S1473-3099(22)00833-7

João Malato et al, Risk of BA.5 Infection among Persons Exposed to Previous SARS-CoV-2 Variants, *New England Journal of Medicine* (2022). DOI: 10.1056/NEJMc2209479