

COVID-19 variant found in Brazil 'spreads faster'

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A new variant of the virus that causes COVID-19, identified in Brazil, is likely more transmissible than its parent strain because of mutations in the spike protein, according to researchers.

The P1 variant of the SARS-CoV-2 virus, found in the city of Manaus, has a number of mutations compared to the B.1.1.28 lineage, especially in the spike protein region, says Esther Sabino, one of the researchers involved in its genetic characterisation.

This would lead to an increase in its transmissibility, although it is not known currently whether it would also lead to an increased risk of severe

infections, researchers say.

The health system in Manaus, capital of the northern Brazilian state of Amazonas, has collapsed for a second time amid a surge in COVID-19 cases, medical charity Doctors Without Borders (MSF) reported this month, with insufficient oxygen supplies leaving some hospitals unable to ventilate patients.

"This [spike] protein is found on the surface of the virus and binds to receptors in human cells. Mutations in this region in general can alter the behavior of viruses, increasing their transmissibility," said Sabino.

The researcher added that the 'spike' is the most important protein in the development of vaccines because the virus uses it as a gateway to infect human cells.

Sabino leads the Brazilian research team of the Brazil-UK Centre for Arbovirus Discovery, Diagnosis, Genomics and Epidemiology (CADDE), that between 15 and 23 December tested 31 COVID-19 positive samples from Manaus.

Thirteen of those samples exhibited the P1 variant, which had not been detected in previous surveillance samples in the city between March and November 2020, the study found. The variant has also been detected in Japan in people arriving from Brazil.

The study, which is still in the preprint phase and has not yet been peer-reviewed, has been published on [Virological.org](https://virological.org), a website showing the most recent findings about the evolution and epidemiology of the virus.

The CADDE team has shared samples of the virus with other laboratories for in vitro research and is developing tools for faster detection of the variant in COVID-19 tests.

Evolving strains

According to the authors, the variant found in Manaus is different from others identified around the world, such as B.1.1.7 in the United Kingdom and B.1.351 in South Africa, and even elsewhere in Brazil, like the P2 in Rio de Janeiro and another in Rio Grande do Sul.

"These variants have different origins, but share similar mutations," said Fernando Spilki, a virology professor at Feevale University and coordinator of Brazil's science ministry Corona-omics Network, who did not take part in the study.

Although all of them share mutations, researchers do not know whether the variants evolved independently from each other or if they are related.

What is known is that the variant found in Manaus has alterations of its own and is adapting to the local population to increase its adaptive advantage and survive longer.

Co-author and genetics expert Renato Aguiar, a professor at the Federal University of Minas Gerais, explains that viruses are only able to thrive because of the speed with which they mutate and evolve by copying parts of the genetic code of their hosts. "This is how they manage to jump from a bat to a pangolin, then to a macaque or a human, for example," he said.

While the new variant may increase the number of re-infections, there's no evidence that it causes new infections to be more severe, says Aguiar.

"The severity of and mortality [rate] from COVID-19 has no direct connection with mutations—it has much more to do with characteristics of hosts," in this case, humans, he noted.

The behavior of the P1 strain will depend on how humans behave, he warned: "More gatherings will stimulate the virus to spread faster. It's a cascade: the more gatherings, the more the virus replicates. The more it replicates, the more it mutates. The more it mutates, the more abundant it becomes."

This in turn leads to more severe cases and deaths, as is the case in Manaus, the only city with ICU beds in the Amazonas state, with more than 4.2 million inhabitants.

More than 7,000 people have died of COVID-19 in Amazonas since the pandemic began in early 2020, with more than 47,500 confirmed cases this January alone.

Sabino says the group does not yet have data to predict how the immune system of vaccinated people will behave in contact with the P1 strain.

However, Spilki emphasized that the most important and effective measure to avoid new [coronavirus](#) strains from evolving resistance to vaccines is effective vaccination. "Ideally, we would need vaccination as fast and as wide as possible to stop the [virus](#) from mutating and to avoid trouble with new variants in the future," he added.

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