

Short Communication

Discovery of New Bat Coronavirus (HKU5-CoV-2): Can it be Another Public Health Threat?

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Abstract

The deadly COVID-19 outbreak which started in Wuhan city of China in December 2019, created a dangerous Public Health Disaster the world has ever witnessed. Bats have been widely recognised as natural reservoir hosts of several zoonotic diseases, such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) caused by coronaviruses. A new bat coronavirus similar to the virus resembling COVID-19, has been discovered recently by researchers at the Wuhan Institute of Virology in China. The new virus named as ‘HKU5-CoV-2, carries the risk of animal-to-human transmission. This paper shares the most recent information on the virus and views of other eminent scientists regarding its potential to start another pandemic.

Keywords: Public Health; Bats; HKU5-CoV-2; Risk; Transmission.

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Introduction

Human history is rife with pandemics that have shaped our world from diseases like bubonic plague, smallpox, Spanish flu, HIV (Human Immuno-Deficiency Virus) and COVID-19. [1]. While advances in medical science have helped us combat these scourges, modern challenges like deforestation, urbanization, intensive agriculture, climate change and pollution are fuelling the emergence of new infectious threats at an alarming rate.[1]

The world has already witnessed loss of millions of lives because of the deadly COVID-19 pandemic. It presented a vast challenge to the health and economic system of every nation.[2,3] Just when the world has moved towards normalcy, Chinese researchers at Wuhan Institute of Virology and more recently in Brazil have discovered a new bat like coronavirus that has the potential for animal to human transmission.[4] This has sparked concerns for another pandemic threat. Though it has not been found in human till now, but it uses the same entry pathway to enter the cells as the virus responsible for COVID-19.

Scientists have reported that HKU5-CoV-2, a newly identified bat virus with similarities to COVID-19, has so far only been detected in laboratory studies. It is a member of merbecovirus subgenus, which also contains the virus that causes Middle East respiratory disease (MERS). Merbecoviruses have been identified in minks and pangolins, the animal which is considered as the intermediary in the transmission chain of COVID-19 between bats and humans. Scientists discovered that, like SARS-CoV-2 (the virus that causes COVID-19), it can attach to human ACE2 (angiotensin converting enzyme) receptors through a feature known as ‘furin cleavage site.’[5] Table 1 shows the breakdown of comparison between the new virus and other COVID-19 strains.

Table 1: Comparison of the new HKU5-CoV-2 virus with other COVID-19 strains

Feature	HKU5-CoV-2 (New Virus)	SARS-CoV-2 (COVID-19)	SARS-CoV -2 Omicron BF.7 Variant
Virus Origin	Bats in China	Bats (likely through another animal)	Mutation of SARS-CoV-2
Infecting human cells?	Yes, but less efficiently	Yes	Highly transmissible
Human-to-human transmission?	Not confirmed	Yes	Yes, highly contagious
Potential threat?	Low (for now, studies ongoing)	High	High, but causes mild illness in most cases

Human transmission of virus

Experts have reported that though HKU5-CoV-2 has a lesser binding affinity to human ACE2 than SARS-CoV-2, the possibility of animal-to-human transmission cannot be ruled out. Researchers have discovered that HKU5-CoV-2 might infect human cells as well as small lung or gut tissues cultured in a laboratory.[6] The virus has the ability to transmit through an intermediary animal (host) before entering humans as it binds to several mammalian species in addition to human ACE2 (zoonotic spillover). Humans may contract this disease if they come into touch with infected bats or their bodily fluids, such as faeces, urine, or saliva. However, reports still suggest that its efficiency in infecting human

cells is lower as compared to COVID-19 virus. Researchers in China are closely observing this virus for any possible mutations that can make it more contagious.

HKU5-CoV-2 or new Bat Virus: Symptoms

The symptoms of HKU5-CoV-2 are still unknown because there are currently no verified cases in any human population. However, as it belongs to the same subgenus as COVID-19 and MERS, it may produce similar respiratory symptoms, including shortness of breath, sore throat, fever, cough, fatigue and body aches.[6]

View of other experts on threat of HKU5-CoV-2

An infectious disease expert at the University of Minnesota, called the reaction to the study conducted by the Chinese team of virologists as "overblown." He also mentioned that a vast majority of people are immune to the SARS virus after the Covid-19 pandemic which may help reduce pandemic risk associated with the new virus.[6] Therefore, risk of emergence in human populations should not be exaggerated. Prof. Edward Holmes, an evolutionary biologist and virologist at the University of Sydney felt that 'ACE2 receptor in a merbecovirus is the most concerning aspect of the Chinese research.'[7] Amesh A. Adalja, another senior scholar at Johns Hopkins Centre for Health Security, suggested that 'there are countless number of coronaviruses in different species of animals, particularly bats, that will never spill into humans.'[8]

Possibility of a new pandemic?

So far, there is no immediate risk of a new pandemic caused by HKU5-CoV-2. Several factors determine whether any virus has the potential to start a pandemic:

- The virus must have the ability to enter and replicate in human cells.
- It must spread easily between people (human-to-human transmission).
- The virus must be able to travel across different counties and continents.

So far, researchers have only confirmed that HKU5-CoV-2 virus can invade human cells (first factor).[9] Till now, there is lack of substantial evidence that it spreads from person to person. However, coronaviruses can mutate quickly, so experts are continuously and closely monitoring the situation. Nevertheless, the discovery is a reminder that new viruses continue to emerge, and some of them could pose significant risks in the future.

Precautions to stay safe from HKU5-CoV-2

The Centre for Disease Control (CDC) recommends that even if the virus has not been shown to infect humans, one should always stay up to date on their vaccinations, take preventative measures like wearing masks, washing their hands carefully, practicing social distancing (in virus hot spots) and getting tested for any other related risks. Adopting these habits can help reduce the spread of future viruses. Several monoclonal antibodies and antiviral drugs have also been identified that have the potential to target HKU5-CoV-2, highlighting their importance to be used as therapeutic candidates against these kinds of viruses.[10]

Conclusion and Recommendations

Though HKU5-CoV-2 virus has not been reported in humans till now, we must remain vigilant. The risk of another pandemic occurring in the next few decades is ever-present and potentially increasing due to trends such as urbanization and climate change. [11,12] Researchers and experts need to continue monitoring bats and other animals for new viruses. It is also very important to have strong detection and surveillance systems in place. There is a need to strengthen health care system as it can save lives. Health care facilities should be prepared to handle sudden rush of patients in case of any future outbreaks. Investing in early-stage research on pandemic pathogens is also advocated.

Keeping vaccines ready for new coronavirus strains (universal coronavirus vaccines) could help prevent future pandemics. Special care should be taken in case of children, and they should be educated regarding health risks associated with bats. Children should be advised that they must not touch living, injured or dead bats and that they must immediately tell an adult if they are bitten or scratched by a bat.

References

1. Aliyu AA. Public health ethics and the COVID-19 pandemic. *Ann Afr Med* 2021;20(3):157-163. doi: 10.4103/aam.aam_80_20.
2. Gostin LO, Klock KA, Finch A. Making the World Safer and Fairer in Pandemics. *Hastings Cent Rep* 2023;53(6):3-10. doi: 10.1002/hast.1538.
3. Van Damme W, van de Put W, Devadasan N, Ricarte JA, Muyembe JJ. Is the world ready for the next pandemic threat? *BMJ*. 2018;362:k3296. doi: 10.1136/bmj.k3296.
4. A new coronavirus has just been discovered. Should we be worried? Vaccines Work. Available at: www.gavi.org/vaccineswork. Accessed on: 20thMarch, 2025.
5. Newfound bat virus that uses notorious receptor poses ‘spillover’ risk. *Nature* 638. 2025;863. doi: <https://doi.org/10.1038/d41586-025-00503-7>.
6. New bat virus HKU5-CoV-2 sparks pandemic fears - Is it the next COVID-19? Available from: www.business-standard.com. Accessed on: 20thMarch, 2025.
7. New bat coronavirus with ‘concerning’ traits found by Chinese researchers. Available at: www.telegraph.co.uk. Accessed on: 20thMarch, 2025.
8. What Doctors Are Saying About the New Bat Coronavirus. Available at: www.prevention.com/health. Accessed on: 24th March 2024.
9. New Bat Coronavirus Found in China: Could It Be the Next Pandemic Threat? Available at: www.sahyadrihospital.com. Accessed on: 21th March 2025.
10. New Bat Coronavirus Has Capacity to Spread to Humans. Available at: www.contagionlive.com. Accessed on: 20thMarch, 2025.
11. Bats and staying safe around them. Available at: www.sahealth.gov.au. Accessed on 20thMarch, 2025.
12. Williams BA, Jones CH, Welch V, True JM. Outlook of pandemic preparedness in a post-COVID-19 world. *NPJ Vaccines* 2023;8(1):178. doi: 10.1038/s41541-023-00773-0.