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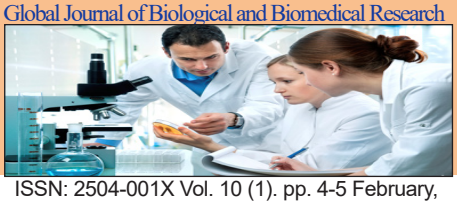

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Animal model for the attenuation of SARS-CoV-2

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ABOUT THE STUDY

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic, which has infected 136 million people worldwide (Almendros, et al., 2020), has recently been reported to cause infection in cats (Andersen, et al. 2020). Angiotensin-converting enzyme 2 (ACE2) is a functional receptor that plays a significant role in the infection of severe acute re-spiratory syndrome associated with coronaviruses in humans (Carlos, et al. 2021) and animals (Fouchier, et al. 2003). The presence of natural ACE2 receptor homologs, to which SARS-CoV spike proteins bind in various animals, including cats, has also been, described (Guan, et al. 2003).

The human-to-animal transmission of SARS-CoV-2 has been proven. However, the following questions remain: (i) Can SARS-CoV-2 transmit naturally from infected cats to susceptible cats? (ii) Since humans can transmit the virus to cats, can infected cats also transmit it to humans? (iii) Finally, can cats serve as a host or a source for SARS-CoV-2? This in vi-tro study investigated the adaptation possibility of the COVID-19 virus to cat cells by blind passage and examined the status of the virus load. Furthermore, this study considered whether cats might function as SARS-CoV-2 hosts and thereby play an effective role in the attenuation of the virus.

Although the origin of the SARS-CoV-2 pandemic is not definitively known, it is reported to have an animal source (a bat or pangolin) and is therefore accepted as a zoonotic infection (Guo, et al. 2008). When the SARS-CoV-1 infection, which has a history similar to SARS-CoV-2, was first described in 2002, palm civet cats were incidentally found to be an occasional source of human infections (Halfmann, et al. 2020).

Koch's postulates, as modified by Rivers (Hanifehne-zhad, et al. 2020), have been met for the SARS vi-rus, thus confirming the identification of an infectious agent. With reference to, it is necessary to isolate the agent from the original infected host, use it to infect a susceptible host and then isolate it from the sec-ond host. With this knowledge, it has been reported that domestic cats that share the same habitat with humans can acquire SARS-CoV-2 from their owners and become infected (Hernández, et al. 2020). Ad-ditionally, the transmission of SARS-CoV-2 between cats sharing the same habitat has been experimental-ly performed. However, in domestic environments, no naturally occurring cat-to-cat transmission has been reported to date. Although it is not possible to predict the mutations that may arise if the virus adapts to a different host, research has unambiguously shown that the currently known SARS-CoV-2 viruses are passed on to domestic cats only from humans with whom they share the same habitat. It therefore appears unlikely that the SARS-CoV-2 infection that occurs between humans and cats.

Even though cats have become infected with SARS-CoV-2 in experimental studies or from sharing the same habitat with infected humans, and infected cat-to-human transmission has not yet been clearly demonstrated. The results of this in vitro study show that domestic cats are only random hosts and not a source of infection for SARS-CoV-2, contrary to what is thought. Therefore, cats cannot be considered a viable animal model for studies that investigate the attenua-tion of SARS-CoV-2.

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