Therapeutics & Vaccines

COLD-ADAPTED, LIVE ATTENUATED SARS-COV-2 VACCINE

WARF: P210139US04

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The Invention

The present invention relates to cold-adapted SARS-CoV-2 viruses created and being characterized by Dr. Kawaoka's team at U. Tokyo. The researchers have passaged the isolate (SARS-CoV-2/UW-001/Human/2020/Wisconsin) 15 times at progressively lower temperatures from 35 °C to 25 °C with the last 3 passages at 25 °C. To demonstrate attenuation, the inventors infected golden Syrian hamsters with the parent virus (before passaging) and the cold-adapted virus after 15 passages. Syrian hamsters are highly susceptible to SARS-CoV-2 infection and present with pathological phenotypes similar to those of infected humans; therefore, Syrian hamsters are an ideal model to evaluate the attenuation of cold-adapted SARS-CoV-2. Animals were infected by intranasal inoculation with 1000 plaque-forming units of virus. While infection with the parental virus caused 10% body weight loss, this reduction in body weight was not observed with the cold-adapted virus. Four days after infection, the amount of virus in the lungs was determined. There was a significant reduction (~100-fold) in the amount of virus in the lungs of animals infected with the cold-adapted virus compared to the lungs of animals infected with the parent virus. Given the attenuation in hamsters, this cold-adapted version of SARS-CoV-2 could be used as a vaccine candidate. Sequencing is underway to identify the specific mutations created through the cold-adaptation process.

Tech Fields

- Therapeutics & Vaccines : Vaccines

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