Title: Hesperidin Carbonized Nanogels inhibited Coronavirus Infection in vivo and in vitro

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Abstract

Coronavirus infections have devastatingly impacted our quality of life and caused over a million death cases, particularly during the pandemic of COVID-19 during 2019-2022. Even though it is a post-COVID-19 era, we need to enrich our knowledge and develop more versatile antivirals for coronavirus. One of the most prompted platforms to evaluate the efficacy of antivirals and investigate the interaction of host and virus is the animal model. However, a well-established animal model for lower biosafety settings is still required regardless of humanized rodent and hamster models for SARS-CoV-2. In this study, we aimed to define the mouse coronavirus, also known as mouse hepatitis virus, in the BALB/c mouse model, by which we also evaluate the efficacy of a novel antiviral material, nanogel, to inhibit coronavirus infections in vitro and in vivo. Our findings indicate that hesperidin, the flavanone derived from the orange peels, possessed a potent antiviral activity against hCoV-229E in the Mv-1-Lu cells and MHV infection in the mouse model mentioned above. Hopefully, our data can provide more initiatives for researchers worldwide to continuously seek more potential solutions and remedies for such a catastrophe as COVID-19 in the future.