

Comparative effects of several intermediate-level and low-level disinfectants on the inactivation of emerging viruses. A systematic review.

Yi Huang

National Biosafety Laboratory, Chinese Academy of Sciences, China



Received: February 21, 2022, Editor Assigned: February 23, 2022, Reviewed: March 28, 2022, QC No. Q-00007;
Proceeding No: Volume: 06, 2022 Published: April 07, 2022, Invoice No. NC-000F7

Abstract

Statement of the Problem: Modern human activity is profoundly changing our relationship with microorganisms with the startling rise in the rate of emerging infectious diseases. SARS-CoV-2, Ebola virus and Nipah virus are prominent examples. Since COVID-19 and the West African Ebola virus disease outbreak, more efforts have uncovered preventative measures to limit their spread. However, there are currently no published validation studies for the chemical disinfection against Nipah virus

Methods: Virucidal efficacy of three low-level disinfectants and medical ethanol against SARS-CoV-2, Ebola virus and Nipah virus was evaluated in quantitative suspension tests in our study, including Micro-Chem Plus detergent disinfectant cleaner, FWD, W30 and medical ethanol. Among them, Medical EtOH® and Micro-Chem Plus® (MCP, National Chemical Laboratories, Inc., Philadelphia, Pennsylvania) are two commercial, broad-spectrum disinfectants. Similar with MCP but more environmental friendly, FWD is also a dual quaternary ammonium compounds (QAC) product which is still in the stage of research and development. W30 is an amphoteric surfactant with lower toxicity, which could be touched by skin directly. All products with different concentration were tested with application time from 15 seconds to 8 minutes and performed a comparative inactivation analysis for three emerging viruses above

Results: Our results show that they are highly effective at inactivating SARS-CoV-2, Ebola virus and Nipah virus in 15 seconds, even 19% ethanol was also able to inactivate Nipah virus with more than 8 minutes contact time. Comparative analysis displayed sufficient virucidal efficacy of them against SARS-CoV-2, Ebola virus and Nipah virus despite some differences in working concentration and contact time. We expect that our study can assist in decontamination in healthcare settings and high level biosafety laboratories and can be beneficial to control for emerging infectious diseases caused by above emerging viruses

Biography

Dr. Yi Huang is a Ph.D. at National Biosafety laboratory, Chinese Academy of Sciences carrying out research in emerging virus and biosafety. She went to France in 2008 and 2010 for training and scientific research in Laboratory P4 of Jean Mérieux in Lyon. In this conference she reported evaluation of the virucidal activity of several low-level disinfectants and medical ethanol against emerging viruses including SARS-CoV-2, Ebola virus and Nipah virus.

Recent Publications

Huang Y*, Xiao S, Song D., Yuan Z. Evaluating the Virucidal Activity of Four Disinfectants Against SARS-CoV-2. *Am J Infect Control*. 2021 Nov 12:S0196-6553(21)00719-7. Huang Y*, Xiao S, Yuan Z*. Comparison and Evaluation of Real-Time Taqman PCR for Detection and Quantification of Ebolavirus. *Viruses*. 2021 Aug 10;13 (8):1575. Tianyu Gan, Dihan Zhou, Yi Huang, Shuqi Xiao, Ziyue Ma, Xiaoyou Hu, Yimin Tong, Huimin Yan, Jin Zhong, 2021. Development of a New Reverse Genetics System for Ebola Virus. *mSphere*. 2021 May 5;6(3):e00235-21. (Tianyu Gan, Dihan Zhou, and Yi Huang contributed equally to this work.) Gong M, Yang Y, Huang Y, Gan T, Wu Y, Gao H, Li Q, Nie J, Huang W, Wang Y, Zhang R, Zhong J, Deng F, Rao Y, Ding Q. Novel quinolone derivatives targeting human dihydroorotate dehydrogenase suppress ebola virus infection in vitro. *Antiviral Res*. 2021 Aug 12:105161. (MG and YY contributed equally to this work) Yi Yan, Ke Wu, Jun Chen, Haizhou Liu, Yi Huang, Yong Zhang, Jin Xiong, Weipeng Quan, Xin Wu, Yu Liang, Kunlun He, Zhilong Jia, Depeng Wang, Di Liu, Hongping Wei, Jianjun Chen. Rapid Acquisition of High-quality SARS-CoV-2 Genome via Amplicon-Oxford Nanopore Sequencing. *Virologica Sinica*. 2021 Oct;36(5):901-912. Yu-Zhi Fu, Su-Yun Wang, Zhou-Qin Zheng, Yi Huang, Wei-Wei Li, Zhi-Sheng Xu and Yan-Yi Wang. 2020. SARS-CoV-2 membrane glycoprotein M antagonizes the MAVS-mediated innate antiviral response. *Cell Mol Immunol*. 2020 Oct 27;1-8. (These authors contributed equally: Yu-Zhi Fu, Su-Yun Wang, Zhou-Qin Zheng) Huang Y*, Huang J, Xia H, Shi Y, Ma H, Yuan Z. Networking for training Level 3/4 biosafety laboratory staff. *J Biosaf Biosecur*. 2019 Mar;1(1):46-49. Han Xia, Yi Huang, Haixia Ma, Bobo Liu, Weiwei Xie, Donglin Song, Zhiming Yuan. 2019. First Biosafety Level 4 Laboratory User Training program in China. *Emerging Infectious Diseases*,