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Non-Mouse-Adapted H1N1pdm09 Virus as a Model for Influenza Research

Mohammad Al Farroukh

Federal State Budgetary Scientific Institution "Institute of Experimental Medicine", Russia

Abstract

The number of lung-adapted influenza viruses is limited. Most of them are not antigenically related to current circulating viruses. Viruses similar to recent strains are required for screening modern antiviral compounds and studying new vaccine candidates against novel influenza viruses. The process by which an influenza virus adapts to a new host is rather difficult. The aim of this study was to select a non-adapted current virus whose major biological properties correspond to those of classical lab-adapted viruses. Mice were inoculated intranasally with non-lung-adapted influenza viruses of subtype H1N1pdm09. They were monitored closely for body weight loss, mortality outcomes and gross pathology for 14 days following inoculation, as well as viral replication in lung tissue. Lung-adapted PR8 virus was used as a control. The tested viruses multiplied equally well in the lower respiratory tract of mice without prior adaptation but dramatically differed in lethality; the differences in their toxicity and pathogenicity in mice were established. A/South Africa/3626/2013 (H1N1)pdm09 virus was found to be an appropriate candidate to replace PR8 as a model virus for influenza research. No prior adaptation to the animal model is needed to reach the pathogenicity level of the classical mouse-adapted PR8 virus.

МИНИСТЕРСТВО НАУКИ
И ВЫСШЕГО ОБРАЗОВАНИЯ
РОССИЙСКОЙ ФЕДЕРАЦИИ

Biography

Dr. Mohammad Al Farroukh is currently a PhD student in Saint Petersburg State University conducting his research in Department of Virology, Federal State Budgetary Scientific Institution "Institute of Experimental Medicine", He obtained his master's degree in biomedical science from kazan federal university in 2019 and his bachelor's degree in biomedical science from Damascus university in 2016, he participated as co-author in two published scientific papers.

Publications

1. COVID-19 in Light of Seasonal Respiratory Infections
2. Non-Mouse-Adapted H1N1pdm09 Virus as a Model for Influenza Research
3. Synthesis and in vitro antitumor activity of novel alkenyl derivatives of pyridoxine, bioisosteric analogs of feruloyl methane

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