

Abstract

Similarities in Antiviral Humoral Immune Response to Nucleocapsid Proteins of Hazara and Crimean–Congo Hemorrhagic Fever Virus [†]

Merve Kalkan-Yazıcı ¹ and Mehmet Ziya Doymaz ^{1,2,*}

¹ Department of Microbiology, Beykoz Institute of Life Sciences and Biotechnology (BILSAB), Bezmialem Vakıf University, Yalıköy Mahallesi, 34820 Beykoz/İstanbul, Turkey; mervekalkan1@gmail.com

² Department of Medical Microbiology, Faculty of Medicine, Bezmialem Vakıf University, Adnan Menderes Bulvarı Vatan Caddesi 34093 Fatih/İstanbul, Turkey

* Correspondence: mzdoymaz@bezmialem.edu.tr

[†] Presented at Viruses 2020—Novel Concepts in Virology, Barcelona, Spain, 5–7 February 2020.

Published: 17 June 2020

Abstract: Hazara virus (HAZV), a tick-borne agent of the nairoviruses, is closely related to Crimean–Congo hemorrhagic fever virus (CCHFV). Hazara virus has not been reported as a pathogen for humans and can be studied under BSL-2 conditions, whereas CCHFV causes severe hemorrhagic diseases, with up to 30% mortality rate in humans, and requires BSL-4 facilities to be handled. Serologic and phylogenetic similarities between the two viruses would therefore be an interesting area of research. In this study, we evaluated the immunological similarities between these two viruses using nucleocapsid protein as a model. Here, we evaluated cross-reactivity between CCHFV and HAZV rNP, which forms virus-like particles when expressed in *Pichia pastoris*. In Western blot assays using CCHFV-infected human and immunized mice and rabbit sera, cross-reactions were detected between the nucleoproteins of both viruses. Virus-like particles were visualized by transmission electron microscopy (TEM) and monitored by dynamic light scattering (DLS). These results suggest that nucleocapsid proteins of HAZV and CCHFV share similarities regarding the antiviral humoral response in both species.

Keywords: CCHFV; HAZV; nucleocapsid; *Pichia pastoris*; immunity



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).