Letter to Editor

Iranian Journal of Immunology

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Letter to the Editor Regarding "An Overview on Serology and Molecular Tests for COVID-19: An Important Challenge of the Current Century (doi: 10.22034/iji.2021.88660.1894.)"

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Cite this article as:
ZandiM, Behboudi E, Shojaei MR, Soltani S, Karami H. Letter to the Editor Regarding "An Overview on Serology and Molecular Tests for COVID-19: An Important Challenge of the Current Century (doi: 10.22034/iji.2021.88660.1894.)". *Iran J Immunol.* 2022; 19(3):337, doi: 10.22034/IJI.2022.91791.2107.

Keywords: Diagnosis, Helicase, Nonstructural Protein, SARS-CoV-2

Recently in a review article by Mansourabadi et al. published in the Iranian Journal of Immunology, the authors described the serological and molecular tests for COVID-19 (1). The mentioned review considered helicase (Hel) as a structural protein of SARS-CoV-2 (1). However, based on evidence, the genome of novel coronavirus is approximately 30kb in length and encodes only four structural proteins, including spike (S), envelope (E), membrane (M), and nucleoprotein (N) (2, 3), although helicase (NSP13) as a nonstructural protein such as RNA-dependent RNA polymerases (NSP12) encoded by the ORF region and is involved in the replication of the virus (3).

In addition, authors reported that hemagglutinin esterase could be used as a favorite target for SARS-CoV-2 Real-time PCR (1); however, scientific evidence shows that SARS-CoV-2 as a betacoronavirus lineage B like SARS-CoV lacks hemagglutinin esterase (4-6); thus this protein cannot be a target for detection of SARS-CoV-2.

REFERENCES

1. Mansourabadi AH, Sadeghalvad M, Mohammadi-Motlagh H-R, Amirzargar A. Serological and Molecular Tests for COVID-19: a recent update. Iranian Journal of Immunology. 2021;18(1):13-33.
2. Satarker S, Nampoothiri M. Structural proteins in severe acute respiratory syndrome coronavirus-2. Archives of medical research. 2020;51(6):482-91.
3. Yadav R, Chaudhary JK, Jain N, Chaudhary PK, Khanra S, Dhamija P, et al. Role of Structural and Non-Structural Proteins and Therapeutic Targets of SARS-CoV-2 for COVID-19. Cells. 2021;10(4):821.
4. Kumar S, Nyodu R, Maurya VK, Saxena SK. Morphology, genome organization, replication, and pathogenesis of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Coronavirus Disease 2019 (COVID-19). 2020:23.

AUTHOR'S REPLY

Dear Editor

As discussed in our review coronaviruses have several molecular targets within their positive-sense, single-stranded RNA genome. These include genes encoding structural proteins, including envelope glycoproteins spike (S), envelope (E), transmembrane (M), helicase (Hel), and nucleocapsid (N). In addition to the genes that encode structural proteins of SARS-CoV-2, there are species-specific accessory genes that are required for viral replication. These include RNA-dependent RNA polymerase (RdRp), hemagglutinin-esterase (HE), and open reading frame 1a (ORF1a) and ORF1b (1-6).

REFERENCES

1. Corman VM, et al. Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. Euro Surveill. 2020 Jan;25(3):2000045. doi: 10.2807/1560-7917.ES.2020.25.3.2000045.
2. Holshue ML, et al. First Case of 2019 Novel Coronavirus in the United States. N Engl J Med. 2020 Mar 5;382(10):929-936. doi: 10.1056/NEJMoa2001191.
3. Rothe C, et al. Transmission of 2019-nCoV Infection from an Asymptomatic Contact in Germany. N Engl J Med. 2020 Mar 5;382(10):970-971. doi: 10.1056/NEJMc2001468.
4. Chan JF, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. Lancet. 2020 Feb 15;395(10223):514-523. doi: 10.1016/S0140-6736(20)30154-9.
5. Cui J, et al. Origin and evolution of pathogenic coronaviruses. Nat Rev Microbiol. 2019 Mar;17(3):181-192. doi: 10.1038/s41579-018-0118-9.
6. Lu R, et al. Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. Lancet. 2020 Feb 22;395(10224):565-574. doi: 10.1016/S0140-6736(20)30251-8.

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