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LETTER TO THE EDITOR

Role of ORF8a as accessory protein in apoptosis induction in SARS-CoV-2 infection

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Dear editor

Recently in a published article in *Reviews in Medical Virology*, Morais da Silva et al., described the different mechanisms that are involved in cell death process such as apoptosis, autophagy, and necrosis which are caused by SARS-CoV-2.[1] The authors reported SARS-CoV and SARS-CoV-2 genomes contain eight accessory genes whose open reading frames are interspersed among the structural genes; two between S and E genes (ORFs 3a and 3b), five are located between the M and N genes (6, 7a, 7b, 8a, 8b) and one within the N gene (9b); in addition, the authors presented ORF8a as one of the accessory proteins in both SARS-CoV and SARS-CoV-2 in fig. 1,[1] although scientific evidence show that genome of SARS-CoV-2 lacks ORF8a.[2–4]

The genome of SARS-CoV-2 encodes an intact ORF8; however, in case of SARS-CoV, ORF8 is splitting into two separated ORFs including ORF8a and ORF8b.[5] ORF8 shares the least homology among all proteins of SARS-CoV and SARS-CoV-2. By direct binding to major histocompatibility complex class I, ORF8 can down-regulate total and surface levels of it; moreover, ORF8 of SARS-CoV-2 degrades major histocompatibility complex class I by the autophagy pathway.[6] In conclusion, ORF8a is absent in SARS-CoV-2, however, SARS-CoV contains ORF8a and ORF8b.

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AUTHOR CONTRIBUTIONS

Milad Zandi conceptualized, edited and supervised the study. Hasan Karami involved in investigation. All authors reviewed and approved the final version of the manuscript.

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Abbreviation: ORF, open reading frame.

