



Variations in Genomic Pattern of COVID-19: Challenges for Pakistan

Manzar Abbas^{1*}, Muhammad Saleem², Tariq Mahmood Ansari³, Atia Atiq⁴, Maria Atiq⁵

¹Institute for Molecules and Materials, Radboud University, Heyendaalseweg 135, 6525 AJ Nijmegen, The Netherlands

²Biodiscovery Institute, Centre for Biomolecular Sciences, School of Pharmacy, University of Nottingham NG7 2RD, UK

³Institute of Chemical Sciences, Bahuaddin Zakariya University, Multan, 60800, Pakistan

⁴Department of Physics, University of Education, Lahore, Multan Campus, Pakistan

⁵Department of Physics, Govt. Sadiq College Women University, Bahawalpur Pakistan

*Corresponding Author email:

manzar.abbas90@yahoo.com

m.abbas@science.ru.nl

Ph. +31-687711323

Keywords: COVID-19

ASBE

Applied Sciences & Business
Economics

Abstract

Coronavirus disease 2019 named as COVID-19 has severely affected humanity across the World. This viral disease is the third outbreak of coronavirus and declared as a global pandemic by the World Health Organization (WHO). It was reported in the Wuhan city of Central China first time and rapidly spread all over the World. As of 23 July 2020, it has infected around 15 million people, and lead to more than 0.6 million deaths worldwide ([Dashboard WHO-accessed on 23 July 2020](#)). The COVID-19 is more contagious and fatal as compared to other strains of coronavirus. The elderly and people with a compromised immune system are more vulnerable to this infectious disease.

Now a day, every country is facing healthcare and socioeconomic problems and fighting against this pandemic with all means to save their people. The outstanding research infrastructure and substantial funding in the developed countries are supporting the scientists to make the vaccine or medicine to curb the COVID-19. However, the developing countries such as Pakistan that has already a meagre budget with GDP ratio for the research can face real threatening consequences in this pandemic. No doubt, the government of Pakistan has announced the rapid research funding programs for COVID-19 ([HEC-RAPID Research and Innovation Proposals-Initiative](#)). Still, it may not be enough to end up with vaccination or remediation. The variations in the strain of COVID-19 have become the unsolved question for scientists, even in developed countries. The genomic sequence of coronavirus 2019 submitted to the NCBI PubMed of the first patient in Pakistan (MT262993.1) highlights two deletions in the polyprotein of the virus. These deletions are from amino acid number 3153-3157(FYWFF) and amino acid number 6418-6424 (LYLDAYN) in the polyprotein of COVID-19 ([Zainab et al., 2020](#)). The impact of these two deletions on the case

fatality rate of patients in Pakistan is yet to be seen. Similarly, the effectiveness of the global vaccine in the presence of these changes needed to be carefully checked before being allowed to use on patients. Based on current information, the case fatality rate (CFR) of COVID-19 is significantly variable in different countries. Therefore, it will be essential to keep a close eye on the CFR to observe the effect of demography, higher temperature, and inherent immune resistance, if any, to COVID-19 as the only hope to current COVID-19 crisis.

The low research budget and lack of infrastructure for research and development of universities in Pakistan can be the possible obstacle to make the vaccine against the COVID-19, which have more compatibility with the local environment and genome pattern of patients in Pakistan. The current smart lockdown measures of hot-spot areas of COVID-19 can effectively contain the virus spread; however, there is a need to make the vaccine for long-term safety of people. We urge here to increase the research budget and establish the laboratories in every university that can be used for research on making vaccines and testing services of such pandemics. Furthermore, the poor economy, weak healthcare systems, and

non-hygienic conditions are serious factors to cope with this pandemic.

References

World Health Organization (WHO), Coronavirus (Covid-19) updates accessed on 23 July 2020. <https://experience.arcgis.com/experience/685d0ace521648f8a5beeee1b9125cd>,
COVID-19 RAPID Research and Innovation Proposals – HEC on 31 March 2020

<https://www.hec.gov.pk/english/HECAnnouncements/Pages/RRII.aspx>,

Zainab T, Shamshad S, Noureen A, Malik A, Asad MJ, and Rizvi KA, Severe acute respiratory syndrome coronavirus 2 isolate SARS-Cov-2/Manga1/human/2020/PAK, complete genome, GenBank: MT262993.1, VRL 31-MAR-2020