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Wide variabilities detected among spike proteins of SARS Cov2 globally- RIGI predicted to be an important immune response molecule

Aruna Pal,

West Bengal University of Animal and Fishery Sciences, India

Abstract

SARS Cov2 is a newly emerged virus causing pandemic with fatality and co-morbidity. The greatest limitations emerged is the lack of effective treatment and vaccination due to frequent mutations and reassortment of the virus, leading to evolvement of different strains. We identified a wide variability in the whole genome sequences as well as spike protein variants (responsible for binding with ACE2 receptor) of SARS Cov2 identified globally. Structural variations of spike proteins identified from representative countries from all the continents, seven of them have revealed genetically similar, may be regarded as the dominant type. Novel non-synonymous mutations as S247R, R408I, G612D, A930V and deletion detected at amino acid position 144 were identified and attempted to explore their functional significance. RMSD values ranging from 4.45 to 2.25 for the dominant variant spike1 with other spike proteins. This study is informative for future vaccine research and drug development with the dominant type. In the next step, we attempt to explore the innate immune response against SARS Cov2. We predicted RIGI as an important molecule which can bind with each of the spike proteins we studied. There exists competitive binding of RIGI or ACE2 receptor with SARS Cov2 virus, the former protects the individual, while the later causes the disease.

Biography:

Dr. Aruna Pal has completed her PhD from IVRI (Indian Veterinary Research Institute) and have 14 years of research experience in disease genetics, mitogenetics and others. She had vast experience in hospital, as doctor, as Scientist and in Teaching. She had published more than 25 research papers, books, book chapter with reputed journals and publishers. She had established laboratory, handled many extramural research projects. She is a recipient of reputed Awards at national level as well as for handling research project on Gene Editing in US. She acted as External examiner for foreign universities as well as National universities

Speaker Publications:

1.“Biodiversity among sheep and goat reared under different agroclimatic regions of West Bengal, India”; Indian Journal of Animal Sciences 87 (1): 80–86, January2017/Article.

2. “Molecular characterization of Bu-1 and TLR2 gene in Haringhata Black chicken”. Volume 112, Issue 1, January 2020, Pages 472-483

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4. “Polymorphism of growth hormone gene and its association with seminal and sexual behavioral traits in crossbred cattle.”; Volume 81, Issue 3, February 2014, Pages 474-480

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