Antibody Response against Severe Acute Respiratory Syndrome Coronavirus 2 Messenger Ribonucleic Acid Vaccines in Infected Individuals: A Systematic Review

By Roslan, M (Roslan, Madihah) ; Nisfu, FRM (Nisfu, Farah Ratulfazira Mohd) ; Arzmi, MH (Arzmi, Mohd Hafiz) ; Wahab, RA (Wahab, Ridhwan Abdul) ; Zainuddin, N (Zainuddin, Norafiza)

View Web of Science ResearcherID and ORCID (provided by Clarivate)

Source MALAYSIAN JOURNAL OF MEDICAL SCIENCES

Volume: 30 Issue: 4 Page: 8-24

DOI: 10.21315/mjms2023.30.4.2

Published 2023

Indexed 2023-09-10

Document Type Review

Abstract Individuals with a history of coronavirus disease 2019 (COVID-19) exhibit memory immunity acquired during natural infection. However, a decline in immunity after infection renders these individuals vulnerable to re-infection, in addition to a higher risk of infection with new variants. This systematic review examined related studies to elucidate the antibody response in these infected individuals after messenger ribonucleic acid (mRNA) vaccination. Hence, the focus of this review was to ascertain differences in the concentration of binding and neutralising antibodies of previously infected individuals in comparison to those of infection-naive

individuals after administration of two doses of mRNA vaccination through available case-control and cohort studies. Positive reverse transcriptase-polymerase chain reaction (RT-PCR) test or detectable anti-severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) antibodies at the baseline in included studies showed categorisation of infected and uninfected individuals. This review utilised three online databases: PubMed, Scopus and Cochrane with the following keywords: (COVID-19 OR 'Coronavirus Disease 2019' OR SARS-CoV-2) AND Immun* AND (Pfizer OR BioNTech OR BNT162b2 OR Comirnaty OR Moderna OR mRNA-1273) from January 2019 to July 2021. Following the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocol (PRISMA-P) 2020 guidelines and assessment based on the Crowe Critical Appraisal Tool (CCAT), we included 13 related qualified papers of observational studies discerning the binding and neutralising antibody concentrations of infected and uninfected individuals after administration of mRNA vaccines, such as the BNT162b2 and mRNA-1273 vaccine. The mRNA vaccines induced robust binding and neutralising antibody responses in both groups. However, infected individuals showed induction of higher antibody responses in a shorter time compared to uninfected individuals. Hence, a single dose of mRNA vaccination for infected individuals may be sufficient to reach the same level of antibody concentration as that observed in uninfected individuals after receiving two doses of vaccination.

Keywords

Author Keywords: COVID-19; SARS-CoV-2; mRNA vaccine; vaccine; antibodies; antibody response

Keywords Plus: HEALTH-CARE WORKERS; VACCINATION; BNT162B2; STRATEGY; TOOL; 1ST

Addresses

[1] Int Islamic Univ Malaysia, Dept Biomed Sci, Kulliyyah Allied Hlth Sci, Kuantan, Pahang, Malaysia

[2] Int Islamic Univ Malaysia, Dept Fundamental Dent & Med Sci, Kulliyyah Dent, Kuantan, Pahang, Malaysia

[3] Management & Sci Univ, Int Med Sch, Shah Alam, Selangor, Malaysia

[4] Uppsala Univ, Oncol & Clin Genet, Uppsala, Sweden

[5] Int Islamic Univ Malaysia, Dept Biomed Sci, Kulliyyah Allied Hlth Sci, Kuantan 25200, Pahang, Malaysia

Categories/ Classification

Research Areas: Research & Experimental Medicine

Citation Topics: 1 Clinical & Life Sciences › 1.104 Virology - General › 1.104.1353 Coronavirus

	Sustainable Development Goals: 03 Good Health and Well-being
Web of Science Categories	Medicine, Research & Experimental
Language	English
Accession Number	WOS:001055512600002
PubMed ID	37655145
ISSN	1394-195X
eISSN	2180-4303
IDS Number	Q1XH2

– See fewer data fields

Citation Network

In Web of Science Core Collection

0 Citations

58 Cited References

How does this document's citation performance compare to peers?

← Open comparison metrics panel

Data is from InCites Benchmarking & Analytics

Use in Web of Science

0	1
Last 180 Days	Since 2013

This record is from:

Web of Science Core Collection

- Emerging Sources Citation Index (ESCI)

Suggest a correction

If you would like to improve the

quality of the data in this record, please **Suggest a correction**