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A Review of Documented Immune Responses to SARS CoV-2 as a Basis for Therapy and Vaccine Development

The high level of transmissibility, associated morbidity and mortality rates, and the tremendous effects on the global economy makes SARS CoV-2 a public health emergence of international repute. Owing to its incredible pathologic and epidemiologic dynamics, a quick and effective intervention is urgently required. Understanding the precise behaviour of the immune system during infection with COVID-19 is fundamental in the development of an effective and safe vaccine. Recently published articles on SARS CoV-2 and COVID-19 were reviewed using PRISMA guidelines with an aim to piece together views from different scholars on how the immune system responds to infection with SARS CoV-2. Only papers reporting on immune responses during COVID-19 infection and published in the year 2020 were included. Humoral immune responses including production of immunoglobulin M (IgM), immunoglobulin G (IgG) and cytokines like interferons (IFN-α, IFN-$^{\beta}$ and IFN-ɣ) as well as cellular responses like production of CD8+, CD4+ and natural killer cells (NK-cells), all play a fundamental role during SARS CoV-2 infection. A recombinant subunit vaccine targeting production of adequate neutralizing antibodies against the viral spike protein or a regimen featuring both whole killed and genome based vaccines may be adequately immunogenic.

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