

The COVID-19 Vaccine Saga: A Perspective

Dear Editor,

We read the two studies by Zhu *et al.* 2020^[1] and Folegatti *et al.* 2020^[2] with great interest published in The Lancet, enlisting two recombinant or platform-based adenovirus-vectored (ad5) vaccines in the novel coronavirus disease 2019 (COVID-19) vaccine development. One study is from Wei Chen *et al.*, CanSino Biologics, Wuhan, China;^[1] and the other finding is from Andrew Pollard *et al.*, Jenner Institute at Oxford University, UK.^[2] Targeting the novel and distinct severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is a promising approach because the vaccines used for Middle East respiratory syndrome coronavirus (MERS-CoV) and SARS-CoV-1 could be no longer effective for SARS-CoV-1.^[3] Experiments designed with cell lines and animal models should be supported with human trials for understanding the broader perspective of the efficacy of this vaccine.^[4] Both studies mentioned above have shown significant results, with higher number of neutralizing antibodies and T-cell responses upon seroconversion by 28th day. These responses were targeted toward spike glycoprotein receptor binding domain and reported the occurrence of mild symptoms such as injection site pain, fever, tenderness, and fatigue. Both the studies focused on various age groups and maintenance of equal sex ratio. Wei Chen *et al.* have been successful with phase 2, with two effective concentrations (1×10^{11} and 5×10^{10} viral particles/mL) against placebo among randomly chosen individuals showing >96% seroconversion. It has been a laudable approach by Wei Chen *et al.* to include the elder population, which has been badly affected by the pandemic. Pollard *et al.* have published the significant results of phase 1/2 trial of ChAdO × 1 nCoV-19 vaccine, in comparison with the control used (meningococcal vaccine). As a key finding, they also reported the lowered symptoms upon the administration of paracetamol.

However, much of the details remain unknown about the longevity of response and duration of the antibody titer peak. As the results were taken on the 28th day, there is a risk of collapsing longevity in the following weeks, and there are no available details on the antibody titer and longevity of response after 28th day. The virus is reported to evolve inside the host and known to be genetically modified in different races and ethnic groups all around

the world, therefore the vaccine designed should target a wider range of population and not focus on a single ethnicity.^[5] Longevity of response and host-specific responses needs to be defined in case of pregnant women, children, different age groups, sex, and races. With the booster dose stated necessary by Pollard *et al.* to rejuvenate the longevity, details regarding quantity and ability of the booster dose to induce cell-mediated and neutralizing response need to be given. Furthermore, the correlation between the cell-mediated and humoral response needs to be elucidated. In addition to these, safety precautions need to be tightened to avoid the possible chain of infection. Pharmacovigilance is needed including the monitoring of asymptomatic infections in both vaccinated and unvaccinated persons. We conclude that after careful consideration of these aspects, the upcoming trials need to be conducted, which may result in the birth of a global remedy.

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Conflicts of interest

There are no conflicts of interest.

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